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TEAR DOWN THAT WALL: ENEA CHIEF SEEKS ACCORD

BY EDWARD J. CORREIA

Call it Johan's Vision of World Domination, of a sort. During a recent press tour to promote his company's Element middleware, Enea president and CEO Johan Wall also spoke of a world increasingly populated with embedded circuits. So many, in fact, that soon the embedded industry will lack sufficient resources to keep up.

"In 10 years we won't have the number of software engineers we need to write the amount of code we'll need," said Tom Hayes, Enea's vice president of corporate marketing,

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Johan Wall thinks Eclipse can do for software what SEMI did for chips.

OASIS Introduces Three More Web Services Specs

BY ANDY PATRIZIO

If you thought we didn't have enough Web services standards, the Organization for the Advancement of Structured Information Systems (OASIS) agrees with you. The group announced a trio of new services under the umbrella of a Web Services Transaction (WS-TX) Technical Committee.

The three services—WS-Coordination, WS-AtomicTransaction and WS-BusinessActivity—are meant to ease the process of transactions across heterogeneous environments and coordinate the outcomes of distributed application actions.

WS-Coordination is the framework for services that create a coordination context, which uniquely identifies an activity and that registers participants in the activity. This is the protocol for establishing a con-

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Virtualization Fills Servers to Capacity

With machines at only 10 percent, it seems like a good idea

BY ANDY PATRIZIO

While computing hardware, even expensive high-end servers, has become a commodity in recent years, virtualization, the process of running multiple virtual servers on one physical piece of hardware, has never been so popular.

Intel, Microsoft and Sun Microsystems have all announced virtualization initiatives in recent weeks. Microsoft has announced its Dynamic Systems

Initiative, a series of licensing agreements designed to simplify running multiple Windows servers in a virtual environment. Customers will no longer have to license every inactive or stored instance of a Windows Server. Instead, they can create and store unlimited numbers of instances and pay only for the maximum number of running instances at any given time.

In August, Sun announced a deal to offer VMware's server

virtualization software on its Sun Fire x64 (x86, 64-bit) servers and that Solaris 10 would eventually run on a future release of VMware products. VMware also announced a strategic and product alliance with Intel earlier this year.

It would seem contradictory to the interests of these vendors, given how the bottom has fallen out of computer hardware in recent years. One of the primary reasons is that while many enter-

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At Last, VS 2005 Has Arrived

SQL Server 2005, BizTalk Server 2006 also debut at Nov. 7 launch

BY JENNIFER DEJONG

Microsoft has taken the last step on its long journey to launch the next generation of its development platform and enterprise database.

The company released to manufacturing Oct. 27 Visual Studio 2005 and SQL Server 2005, a Microsoft spokeswoman said. The public launch was to be Nov. 7. "We shipped Visual Stu-

dio 2005 and .NET Framework 2.0!" said Microsoft's corporate vice president of the developer division, S. "Soma" Somasegar, in an Oct. 27 blog entry.

Microsoft is expected to release five editions of Visual Studio 2005, previously promised for 2004: Express, for students and hobbyists; Professional, for corporate developers and ISVs;

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TEAM SYSTEM AT A GLANCE

Visual Studio 2005 Team System comes in the following editions:

Team Edition for Software Architects is built on Visual Studio 2005 Professional Edition. It also includes visual designers, such as Application Designer, for creating applications that fit into a service-oriented architecture; Class Designer, for modeling an application's classes and generating the code associated with them; and Deployment Designer, for validating that system components target servers that can support them.

Visual Studio Team Edition for Software Developers includes tools for source code analysis, unit testing, code coverage and performance monitoring, in addition to Visual Studio 2005 Professional Edition.

Visual Studio Team Edition for Software Testers includes code coverage, unit testing, load testing, manual testing and test case management, in addition to Visual Studio 2005 Professional Edition.

Visual Studio Team Suite bundles Team Architect, Team Developer and Team Tester editions into a single offering.

Visual Studio Team Foundation Server includes build management, source code control and work item tracking tools, as well as the ability to produce project reports based on data from Team Architect, Team Developer and Team Tester.

Source: www.msdn.microsoft.com

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Microsoft

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Symantec Moves Into Development Security

Consulting service takes life-cycle approach to reducing application vulnerabilities

BY DAVID RUBINSTEIN

Symantec, a longtime player in software protection, has taken the assets from its acquisition of AtStake last June to start up a consulting service to work with organizations looking to secure applications during the development life cycle.

Organizations have begun to test applications for such things as buffer overflows, cross-site scripting and SQL injections, but Symantec takes this a few steps further by saying security needs to be considered during the requirements, design and implementation phases.

"People are spending their energy too late in the process," said Brad Arkin, senior manager of Symantec Security Learning Services. "Just as you wouldn't build an application without asking the number of users or performance needs, you need to assess security risks for applications. Maybe you do a requirements sign-off by the developers, or during QA or performance testing. At each milestone, you have the opportunity to introduce security."

Among the key services Symantec offers is Application Development Lifecycle Review, during which time consultants

will help an organization establish a baseline of application security and plot out a road map for establishing security across the life cycle.

Another service for early in the life cycle is Application Design Assessment, which involves the software architects in determining whether a proposed architecture will meet an organization's security requirements.

Arkin explained: "Say you're doing a distributed J2EE app, and using arrows to describe data flow from the app server to the database. How does that communication take place? If

they're using dynamic SQL, it might be vulnerable to a SQL injection. So you make a design statement: 'The app shall use prepared statements, or stored procedures, for communication with the database.'"

Sometimes, vulnerabilities are introduced during the requirements phase, Arkin pointed out. This is especially important for offshore outsourcing, he said. "The U.S. team might find it silly to have to explicitly say, 'Don't display credit-card numbers or Social Security numbers in their entirety,' but the offshore team might not realize the

sensitivity of this kind of data."

The other services Symantec is offering include penetration tests of Web-based applications, code reviews to identify and remediate vulnerabilities, and a hands-on training course for secure development principles.

Symantec hopes to leverage its knowledge of software vulnerabilities to gain a foothold in the growing application security space. "People might not think of Symantec as a place to go for development help," Arkin acknowledged. "People think of us as more of a product company." ■

Code as High As an Elephant's Eye

Latest outsourcing trend moves work to rural America, but is talent there?

BY JENNIFER DEJONG

Call it in-sourcing, home-shoring or rural sourcing.

By any name, the latest outsourcing trend is about one thing: pulling projects back from India and moving them to rural America, where labor costs are lower, time zones are better aligned, and cultural differences aren't likely to arise.

The most recent entrant to the domestic outsourcing arena is Reston, Va.-based JNetDirect, which said last month that it plans to establish a data center in Auburn, Ala., 115 miles southwest of Atlanta. The center, which is expected to focus on the early life-cycle testing phase of the application development process, will target U.S. development managers who must farm out work to keep costs low but don't want to outsource projects to India, said JNetDirect CEO Burke Cox. "That India is on the opposite side of the clock is the biggest problem," he said. "Everything takes longer."

The case for rural U.S.-based development centers is

also bolstered by a growing awareness that cultural differences with India can be difficult to overcome and an expanding sense of patriotism among many in the U.S. programming community. "We are mortgaging the future of America," said Kathy Brittain White, founder and president of Rural Sourcing, which operates development centers in Arkansas, among other locations. "It's not good for America if we have no programmers left."

EXPERT DEVELOPERS?

But for JNetDirect to get off the ground, and Rural Sourcing to grow, they have to convince prospective customers that top-notch programming talent is readily available in rural areas. "Rural America lacks credibility in terms of expert developers," said Cox. To overcome that perception, and to ensure a steady stream of skilled employees, JNetDirect is working closely with the department of computer engineering at Alabama's Auburn University to build its data



SD Times Photo Illustration: Mara Leonardi

center, he said. Plans for the data center followed JNetDirect's September announcement that it had acquired Vanward Technologies, a developer of software quality assurance products and services. "We are extending Vanward's earlier model," said Cox. The project is still in the planning stages, so it's too early to say when the Alabama center is likely to open its doors.

The more established Rural Sourcing also has aligned its development centers with local universities. "We put up centers in areas where there is a pipeline of technology graduates," said White. "There are a thousand universities located

in rural America which offer technology degrees," she said. "You have to reach out to them." The company operates three centers in Arkansas—in Jonesboro, Magnolia and Monticello, home of Arkansas State University, Southern Arkansas University and University of Arkansas-Monticello, respectively.

INDIA STILL CHEAPER?

Costs in rural America don't run as low as those in India. But they fall substantially below rates for major metropolitan areas. The fully burdened cost per hour for a Java programmer with two years of experience is between US\$85 and \$90 in New York City, \$45

in rural America and \$25 in India, according to Fran Karamouzis, a research director at Gartner.

The fully burdened cost takes into account overhead expenses, including employee benefits and real estate prices, among others.

India appears cheaper. But Cox and others said that isn't always the case. "Comparing the \$45 with \$25 on a cost-only basis is dangerous," he said. "You can't look at the bottom dollar rate." There are intangibles to consider. For instance, at least a few on-site visits are always required. "With India, it takes a week to get there and back," he said. "But I can fly to

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Microsoft Takes Creative (Shared Source) License

BY EDWARD J. CORREIA

Microsoft last month unveiled a trio of new licenses under its Shared Source Initiative, and said the reasons were more about keeping its policies simple and predictable than about reducing confusion around the dozen or so agreements it once maintained.

"It was much more about dealing with the same issue that the OSI has been wrestling with," said Jason Matusow, director of Shared Source at Microsoft, referring to the Open Source Initiative and its license vetting process that began in April. "As property owners consider licensing their source code, they often decide that there are a few terms that need tweaking in existing licenses. While this is completely understandable on one level, it does lead to an ever-increasing number of licenses."

The new program replaces all existing Shared Source licenses with three one-page agreements. Two of those—the two that actually permit changes to source code—also

contain so-called "L" derivations limiting source code to the Windows platform. Windows CE Shared Source and Shared Platforms initiatives are not affected by the change.

Bill Weinberg, open-source architecture specialist at the Open Source Development Labs, said that while Microsoft's licenses appear to be well structured, he is dubious of the need for additional open-source licenses when so many already exist. "Like the OSI, I am against unnecessary license proliferation. Microsoft's [licenses] look

very much like the CDDL," he said, referring to the Common Development and Distribution License that governs Open Solaris. "And if [Microsoft] means to be open, why don't they just use CDDL?"

The OSI (www.opensource.org) in April issued a statement in which it characterized interference between open-source licenses as "a sufficiently serious problem," and at that time began a three-tier classification of open-source licenses—which currently number around 41—as preferred, recommended but

not preferred, and not recommended.

"The challenge [Microsoft] faces is that they need to pass OSI muster," Weinberg said. "Then again, they may not care." Among OSI's goals is to deprecate licenses that are not sufficiently different from ones that came before. Microsoft has no plans to submit its new licenses to the OSI.

Despite a total of five distinct licenses, Matusow insisted that Microsoft is offering just three. "There are three template licenses for the general release

of source code," Matusow said. "The 'L' versions are identical licenses with the addition of the one clause that limits the scope of that license. I realize this is an issue of semantics, but to me, the most important factor is the idea of the three core templates that make our licensing simple and predictable."

The most liberal of the three is the Microsoft Permissive License and will be the program's primary license, Matusow said.

Ms-PL is intended mainly for developer tools, applications and components, and permits changes and redistribution of Microsoft source code either commercially or non-commercially.

Microsoft will decide case-by-case when a limited license is required, based on such commercial considerations as the target audience (government versus hobbyist) and the technology itself (code operating system components versus simple tools and utilities).

The new licensing took effect in October. ■

NOT ALL SHARING IS ALIKE

Permissive License (Ms-PL): Permits developers to view, modify and redistribute Microsoft source code and charge licensing fees for derivative works.

Limited Permissive License (Ms-LPL): Limited version of the Ms-PL restricts usage of such licensed applications to the Windows platform.

Microsoft Community License (Ms-CL): A reciprocal source-code license; permits commercial and noncommercial distribution, but introduces specific requirements for developers that intend to

combine Microsoft's code with their own. If application files contain code licensed under the Ms-CL, all source code for files must be redistributed under the Ms-CL.

Microsoft Limited Community License (Ms-LCL): Limited version of the Ms-CL restricts usage of such licensed applications to the Windows platform.

Microsoft Reference License (Ms-RL): Permits source code to be viewed but not modified or redistributed.

Source: www.microsoft.com

Anti-Competitive, Then Cooperative

Microsoft positions settlements as opportunity to work with others

BY LISA MORGAN

Microsoft's settlement with RealNetworks last month purportedly brings to an end a long string of lawsuits involving the software giant, beginning with the landmark antitrust case filed by the U.S. Department of Justice in 1997.

Microsoft, which declined several requests for comment for this story, has repeatedly positioned antitrust settlements with other vendors as an opportunity to cooperate, when it has been Microsoft's alleged anti-competitive practices that inspired much of the litigation in the first place. Microsoft has spent more than US\$4 billion settling the antitrust and patent infringement cases, and has been a party in other cases, some of which are not addressed in this article.

In the absence of litigation, there is no need for settlement, and at the same time, some level of litigation is inevitable in a highly competitive market like the software industry, where intellectual property protection

is imperative. Microsoft's recent settlements could be viewed as evidence of a more cooperative behemoth, but there also are other valid reasons to settle rather than seeking a judicial resolution of issues.

According to Robert W. Payne, a partner at LaRiviere, Grubman & Payne, an intellectual property law firm in Monterey, Calif., approximately 95 percent of cases settle because the economic and psychological effects of protracted litigation can become "unbearable."

"Early settlements save legal expenses and can be beneficial if both sides can realistically evaluate the facts and the potential outcomes," he said. "Companies can spend over \$1 million litigating patent infringement cases. Even if the litigation costs are lower, a business may choose settlement because it allows the company to manage risks and it often provides a better net economic result."

Payne said that although Microsoft may not be affected

by the psychological wear and tear that forces smaller companies to settle, litigation can nevertheless seem onerous because the outcome is uncertain and litigation may adversely affect business or investment relationships.

Settlement enables companies to manage publicity, which may include a confidentiality clause as to the terms of settlement. Control over the publicity enables companies like Microsoft to put a positive spin on otherwise negative news such as being held liable for anti-competitive practices or patent infringement.

MAKING AMENDS

The United States v. Microsoft antitrust case spawned a wave of related lawsuits. Approximately 20 states brought subsequent antitrust suits alleging that Microsoft had overcharged state citizens as well as engaged in anti-competitive practices. Microsoft has settled most if



not all of those cases.

Microsoft has also settled cases with vendors that had been harmed by Microsoft's monopolistic conduct, including AOL Time Warner, Gateway, IBM, Novell, RealNetworks and Sun. The Real case was settled most recently.

"The risk is that one company will become irrelevant because another succeeds," said Eric R. Pesik, an attorney, formerly at Borland, who is now working at Seagate Technology in Milpitas, Calif. "Before the Department of Justice's antitrust case, Lotus accused Borland of stealing the look and feel of Lotus 1-2-3 for

its Quattro Pro spreadsheet program. The litigation lasted five years and went all the way to the United States Supreme Court, but ultimately both Borland Quattro Pro and Lotus 1-2-3 were out-competed by Microsoft Excel."

RealNetworks: On Oct. 11, 2005, Microsoft and Real reached a three-part settlement worth \$761 million that resolves Real's antitrust case worldwide and forms a new partnership between the two companies focused on innovation and the promotion of digital music and games.

Pursuant to the antitrust and technology agreement, Microsoft will pay Real \$460 million in cash up-front to resolve all damages claims. The agreement also involves a series of technology licenses and commitments under which Real will obtain long-term access to Windows Media technologies. Microsoft will promote Real's

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Geronimo! IBM Jumps in With Apache Support

Company also to offer community edition of remade Gluecode server

BY ALEX HANDY

The Apache Geronimo project reached a milestone in October when it was officially certified

as a J2EE-compliant application server. To capitalize on this new development, IBM, which acquired Geronimo support

company Gluecode last May, announced that it would be offering support agreements for Geronimo, and would also

offer IBM WebSphere Application Server Community Edition (WASCE), a revamped version of Gluecode's Geroni-

mo-based app server.

The move is part of a growing trend within IBM to support tools and software rather than sell them. WASCE is available free from IBM's Web site, and three levels of support agreements are available there as well.

'NATURAL NEXT STEP'

Scott Cosby, Gluecode's transition executive at IBM WebSphere, said in an interview that IBM has begun to support more open-source projects in this way, but that this was simply a development of the business and not necessarily a grand strategy.

"This is a very natural next step as far as the integration of Gluecode software into IBM," said Cosby. "It's a product offering that's very similar to what Gluecode had; it's like Apache Geronimo with some add-ons. Geronimo is really a core runtime. There's lots of different components that make it up. ActiveMQ is in there, Tomcat's in there. That gives [developers] a lot of flexibility." Cosby noted that there is an Eclipse-based plug-in that comes with WASCE.

Cosby went on to list the three things he felt made WASCE preferable to Geronimo. "First, we are embedding and including the IBM Java Runtime Environment. Second, we include [database server] Cloudscape. Cloudscape is the IBM version of Derby. Third, we include a J2EE application server and a database out of the box." Cosby said that WASCE also includes additional database drivers, support for additional platforms, and an improved graphical installation.

"I think this is interesting progress and a statement around the maturity of Geronimo itself," said Cosby. "Clearly, their reaching a milestone of making a J2EE server is huge. Customers look to see, 'Is it certified J2EE?' As well, we're seeing a rich development environment around Geronimo. We're seeing contributions from a vast array of participants within Geronimo, and that's really what builds a rich platform going forward." ■

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Mark McGinty Database Analyst/Consultant

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REZN8 to Offer WPF-Based Design Tools

BY ANDY PATRIZIO

Remember the nifty interactive Netflix demo at Microsoft's Professional Developers Conference in September? Hollywood effects company REZN8 is planning to make it possible for any-

one to create a similar rich interactive Web page with Microsoft's Windows Presentation Foundation (WPF) technology.

For those who didn't see the demonstration, Microsoft showed a souped-up version of

the Netflix DVD rental Web site, using WPF to make the site much more graphical and versatile at the same time. The DVD queue was represented by a library of DVDs stacked like disc cases on the shelf, and

users could click and drag titles around to reorder their list.

REZN8 specializes in title graphics used on television and movies, such as the animated graphics during football games in which the player and his bio-

graphical information are displayed in colorful animations. That animation is written in DirectX and C++ code, something impossible to do on the Web at present, according to Andrew Whiddett, REZN8's chief technologist. Windows Presentation Foundation will make it possible to bring that level of graphics on the Web without killing browser performance, claimed Whiddett.

"We've been waiting a long time for something like this," he said. "Five years ago, we produced a custom DirectX 3D rendering engine, but we didn't have the same depth of resources to tie it to multiple resources. It was tied to a graphics card, and certainly couldn't be used on the Web."

The best option for Web-based animation currently is Macromedia's Flash, but Whiddett said it can slow performance. "Flash comes from a vector graphics-based scenario and isn't designed as a number of discrete components," said Whiddett. "Flash becomes a load of spaghetti and a maintenance nightmare when it gets too big."

FEWER PAGE REFRESHES

Like other "rich Internet application" solutions, Windows Presentation Foundation allows for writing discrete components that can be updated individually without having to refresh the entire screen, thus cutting down the number of screen refreshes a browser would need. These components can also be swapped in and out of a page and support data binding, which also reduces the need for page refreshes.

"Refreshes can be reduced by the use of AJAX technology now, but WPF can scale more effectively and offers more control over the environment," Whiddett said.

REZN8 it will offer e-commerce/storefront applications and tools for designing channel content and an interface like the Netflix demo beginning next year. One product, according to Whiddett, would be a content channel manager to store the site's content and then service it up through any number of device templates. Whiddett expects the company to make its first product announcements around the beginning of the new year. ■

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TestComplete 4 Looks to Ease Test Case Standardization

BY ALEX HANDY

TestComplete 4, the latest version of AutomatedQA's test automation tool, expected to be released on Nov. 7, is designed to help ease the standardization of manual test cases within an organization.

Drew Wells, vice president of business development at AutomatedQA, said that the TestComplete team has redesigned the tool's interfaces from the ground up.

"We try to get everything you need into one package for enterprise-level testing," said Wells. "The pricing is targeted at smaller teams, but we don't position ourselves in the way that Mercury or Compuware do. The whole idea is that you use record and playback, and it runs on a Windows system. [Users] would use TestComplete to record a

use case where they would do their test with the application, and that creates a script which can be played back exactly as they did it. That alone is worth it for a lot of users. They record a test, they play it back, and

they're able to use regression testing that way. The more experienced users will also use scripting. It records in C#, Visual Basic, Delphi script and JavaScript. With all those languages, [users] can find the best one

for their team."

Wells noted that TestComplete 4 Enterprise Edition includes Text Execute, a command-line tool for testing the tests. "Logs are stored in XML files, and they can be viewed in

[Microsoft's] Internet Explorer browser or [the included] IDE."

TestComplete 4 comes in two versions: the US\$899.99 enterprise edition, and the \$599.99 standard edition. ■

Reactivity Releases XML Tools

BY ALEX HANDY

XML appliance maker Reactivity last month released an update to its XOS4.3 XML operating system aimed at mediating the transactions that take place in an SOA deployment, and a new SDK designed to give developers the tools they need to modify and mutate information and legacy systems to work with their XML tools.

Andrew Nash, CTO at Reactivity, said that his company's tools are intended to help manipulate the incongruous systems, such as authentication and certification, that crop up in a common networked environment.

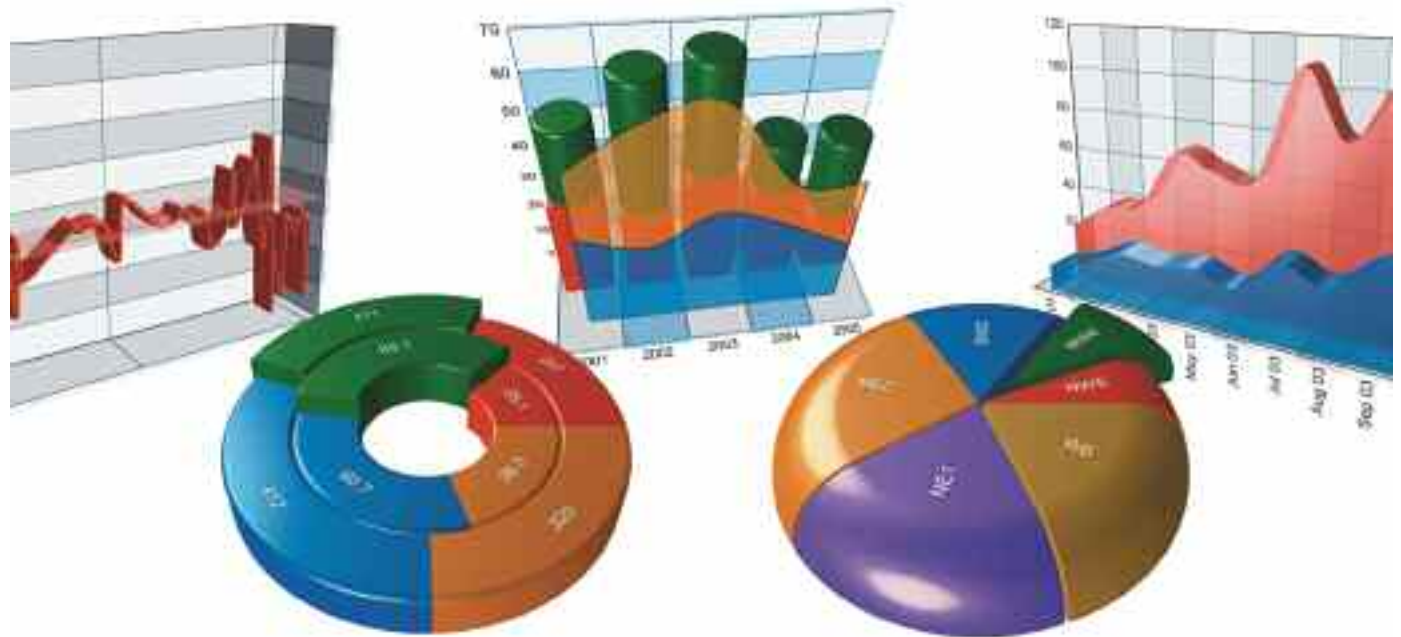
"We've actually been working with Microsoft to integrate with the Integrated Windows Authentication [IWA] subsystem," said Nash.

Nash said that his company also is focusing on handling large messages in the SOA pipeline. "We're seeing a set of requirements coming out of customers that want to use large XML messages," said Nash.

Reactivity's XML appliance costs \$65,000 and is available directly from the company. The Reactivity SDK is now freely available to all Reactivity customers. ■

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Getting Project Management Done OnTime

BY ANDY PATRIZIO

Axosoft has begun beta testing OnTime 2006, the latest version of its software development project management software designed for Microsoft .NET devel-

opers with the promise of less complexity and cost than Visual Studio 2005 Team System.

OnTime offers a tracking system to track and manage bugs using a hierarchical project tree

similar to the Windows file system. Bugs are tracked independently, with a complete history of each bug and how it is being handled or was handled, according to the company.

But comparing OnTime to Team System is somewhat akin to comparing an apple to an apple tree. OnTime's specialty and focus is on bug tracking, task and feature assignment. Microsoft's

Visual Studio 2005 Team System is a considerably more comprehensive tool that does the bug and feature tracking OnTime offers, plus a whole lot more.

TEAM SYSTEM 'AN OVERFIT'

"I was sort of afraid of [Team System] because there was so much to it," said Mike Lowery, president of software developer Order Processing Technologies. "It was kind of an overfit for my organization. The difference in the two products is in who it's for. You can use OnTime to manage a pretty good-sized project. I think Team System is more of a large-scale, integrated development environment."

Being smaller and more focused on a few tasks means Axosoft promises more flexibility than the newer Microsoft product. "You can be up and running in 30 minutes [with OnTime], where it could take days to set up Team System," claimed Axosoft president Hamid Shojaee.

One difference, for example, is that OnTime runs as a Windows or Web application, whereas Team System works within Visual Studio .NET. So if managers want to use Team System to look over various projects, that would mean installing Visual Studio .NET on their system, even if they don't write code.

OnTime 2006, due this month, offers a number of enterprise-oriented features. There will be unlimited field templates for deficits, allowing for more customization of each template in a project. Field templates also can be set by project, so managers can customize the software for their own projects. OnTime 2006 also adds customizable workflow to each project.

On the source code management side of things, OnTime 2006 allows developers to link files from their source code control software to an OnTime defect, feature or task, so programmers can check out linked files and view their entire change history. OnTime will initially support Microsoft Visual SourceSafe and SourceGear Vault but will add more SCM software products in the future, Shojaee said.

OnTime 2006 is sold on a per-seat basis, for US\$149 or \$199 per user, or in five- and 10-person Team Editions. The five-person edition costs \$495, while the 10-person edition is \$995. ■





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News Briefs

NEW PRODUCTS

Multimedia training company Silico-Magnetic Intelligence has released more than 170 best-practice tips for **Microsoft SQL Server 2005**. The tips, offered on 21 CDs, cover a broad range of topics, from database scripting and programming to building sophisticated queries. The training package is priced at US\$995 . . . IBM has released on its alphaWorks Web site two new RFID packages as part of its Emerging Technologies Toolkit. **Application Level Events (ALE) Preview for RFID**, which supports the ALE standard ratified by EPCGlobal in September, helps filter raw EPC data generated by RFID readers. **RFID Device Development Kit** is a collection of code generators and templates that when integrated with IBM's Workplace Client Technology/Micro Edition (WCT/ME) provides a complete development environment that allows programmers to develop and test new RFID applications and explore different methods of support . . . Microsoft and Siebel Systems have announced **Siebel Component Assembly for Microsoft .NET** to simplify and speed the development of custom CRM applications. New features include a prebuilt library of customer relationship management components, integration with Office 2003 and SharePoint, and native support for Web services and ASP.NET 2.0, Microsoft Windows Server 2003 and SQL Server 2005.

UPGRADES

Kinook Software has released **Visual Build Professional 6**. New features include an updated customizable user interface, unlimited undo/redo edits, a code completing script editor supporting JScript, and support for Microsoft Visual Studio 2005. Visual Build Professional 6 costs US\$295 . . . Aonix, a provider of solutions for safety and mission-critical applications, has released **ObjectAda for Windows 8.2**. It integrates current Microsoft platform improvements with the Aonix Ada 95 compiler, is fully compatible with Microsoft Visual Studio .NET 2003 tools and libraries, and introduces an Eclipse plug-in that offers Ada language compile and build capabilities and a complete Ada debugger interface. ObjectAda for Windows 8.2 starts at US\$1,495 . . . Sun Microsystems has announced the release of **Java Enterprise Systems 4** and its integration with Sun's suite of developer tools within the Solaris operating system. Enhancements to Java ES address SOA governance with the addition of a new service registry, ebXML and UDDI support, and Web services reuse. Sun also is bringing enhanced service-oriented architecture capabilities and a complete developer solution to Java ES for US\$140 per employee per year . . . Absoft has released **IMSL Fortran Numerical Library 5.0** for 32-bit and 64-bit Linux. Version 5.0 includes flexible interface modules for all applicable routines. It allows users to utilize optional arguments of the modern Fortran syntax for 100 percent of the relevant algorithms in the library, allowing for greater control and simpler development of code. Single-user prices start at US\$700 for commercial and \$400 for academic customers.



PEOPLE

Koders, which creates tools that enable code reuse, has named **Mark Balabanian** chief financial officer and general manager. He will be responsible for Koders' corporate development . . . **Edward**



CORREIA

J. Correia has been named executive editor of BZ Media's SD Times. Correia has been with the newspaper since its launch in February 2000. Prior to joining BZ Media, Correia spent 10 years with CMP Media, including four years as technical editor of Computer Reseller News, where he ran the PC testing labs.

STANDARDS

BenQ, which acquired the mobile division of German technology company Siemens AG in June, has taken over the leadership positions on two Java Community Process specifications: **JSR 266 (Unified Message Box Access API)** and **JSR 246 (Device Management API)**. ■

Domestic Outsourcing: Is There Top Talent in the Heartland?

◀ continued from page 5

Alabama for the day."

What's more, outsourcing part of your development efforts to India, as JNetDirect has done, can hurt morale at home. "You are always evangelizing with your U.S. staff, getting them psyched for that 4 am conference call," said Cox. "As the boss, you say: 'This is good for the business.'" But you can't really measure how effective your team would be if it were entirely local, he added.

On paper, the per-hour rates for programmers based in India look dirt-cheap, said Monty Davis, president of Decision Design, a Bannockburn, Ill.-based software development services firm. "But [Indian programmers] billed more hours. So US\$20 was more like \$50." From 2000 to 2002, the firm outsourced work to India to reduce the cost of delivering its services. But today all development work takes place in the U.S., he said.

For Mike Taylor, CIO of Pitt County government, in Greenville, N.C., staying close to home costs less than outsourcing to India. For one contract, the per-hour estimate from U.S.-based Rural Sourcing came in lower than a competing estimate from New Delhi, India-based Intelligent Information Systems. That's partly because the bid from the Indian firm included placing some developers on-site in Greenville, said Taylor. "When

you do that, rates jump accordingly."

Increasingly, development shops, such as Patni Computer Systems, in Mumbai, India, are taking a hybrid approach. "Onshore and offshore is typically the case," said Tony Viola, the company's marketing director for North America. The split might be 50/50 or 30/70, he said. Asked whether rates for projects that include Patni developers on-site in the U.S. are higher than those for projects carried out solely in India, Viola said "not necessarily" but declined to specify costs.

SUBTLE DIFFERENCES

When you look at India, the academic credentials of its programmers are impressive, said Cox. But at the end of the day, programming is not the only skill that matters. There are other, subtle factors that can negatively impact projects developed in India. It's not any one thing, said Cox. Rather, it's a growing realization over time that things aren't quite right.

"For instance, in the U.S., our notion of what a quality application looks like is based on our common experience with things such as Netflix and iPod," he said, referring to the online DVD rental service and Apple's online music site and player. "But in India they haven't been doing this as long." Those aren't the norms against which quality applications are compared, said Cox.

Programmers in India are

good software developers, but they are not familiar with U.S. culture, said David Wood, CEO of Washington D.C.-based recruiting firm Sebenza.

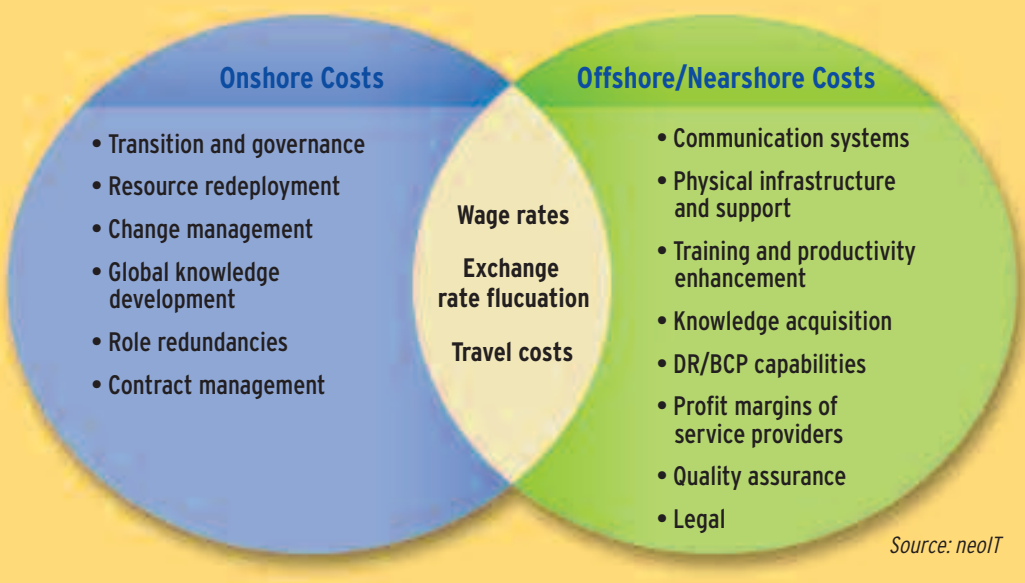
"Say we are writing an app to track baseball players," he said, offering an example. "Indian programmers have a variable called 'innings.' But they don't know the parameters—that there are nine innings in a game." What's more, many Indian programmers tend not to ask questions, he said. The work culture is more hierarchical in nature. And unless they hold a high-ranking position, many employees tend to keep silent, said Wood.

'CAN YOU DELIVER?'

It's not all India's fault, Wood said. Most software development managers in the U.S. lack the training required to deal with problems that arise in managing offshore projects. "We promote them but never train them to be good managers," he said.

That problem is not unique to India. There are drawbacks to rural sourcing, too, said Wood. It's one thing to attract local college graduates. But you have to devise strategies to bring in senior-level people, relocating to areas where housing prices are low. At the end of the day, you have to determine the saturation point for growing the business, said Wood. "If I [outsource] my projects down there, can you deliver?" ■

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Accurev Lures Open-Source Users to Proprietary Side

Releases open-source tool for CVS to show flaws in that version control system

BY DAVID RUBINSTEIN

An outspoken proponent of proprietary software has released a new tool in the hopes of enticing

users of open-source software into its commercial offering.

SCM vendor Accurev last month released Health Checker

for CVS, an open-source tool for identifying repository inconsistencies within that open-source version control system, accord-

ing to Damon Poole, CTO and founder of Accurev. "One of the reasons people convert to a commercial tool is they have an event

happen," Poole said. "There's corruption in the database, or some other untoward event occurs. We want the evaluation proves to start earlier, and one way is to point out the problems with the repository you have."

While acknowledging CVS is widely used, he said some basic problems can result in undesired behaviors. In CVS, he pointed out, there is no way to distinguish between branch information and label information. "This information is conveyed through convention," he said. "If there are a certain number of digits, it's a branch. Another certain number, and it's a label. If you use the wrong convention, you will have an incorrect result. This is the sort of thing you don't find out until later."

He also noted that problems with CVS can arise in mixed operating system environments, as Unix and Windows deal differently with case sensitivity, and this can create corrupt archives.

Cliff Utstein, Accurev's vice president of marketing and business development, said the company chose to release an open-source tool for CVS because "the community that would adopt this is the open-source community."

Utstein said that many open-source users start out saying, "We're going to use Linux and go open source," pointing out that project managers will advocate using CVS because it's free and easy to get started with. "But the difference between operating systems and SCM is glaring. Companies like Red Hat and Novell offer support and training, so you're not out there on your own. When you go open source with CVS, you don't have the infrastructure behind you." Poole explained that among other things, CVS does not do replication. "With commercial tools, you get a lot of things out of the box that you don't have to create yourself" with scripts and the like to maintain the source repository.

Under the terms of a license Accurev created for Health Checker for CVS, the software, which is available for free via download on the Accurev Web site, can be modified but cannot be included in a commercial release. ■

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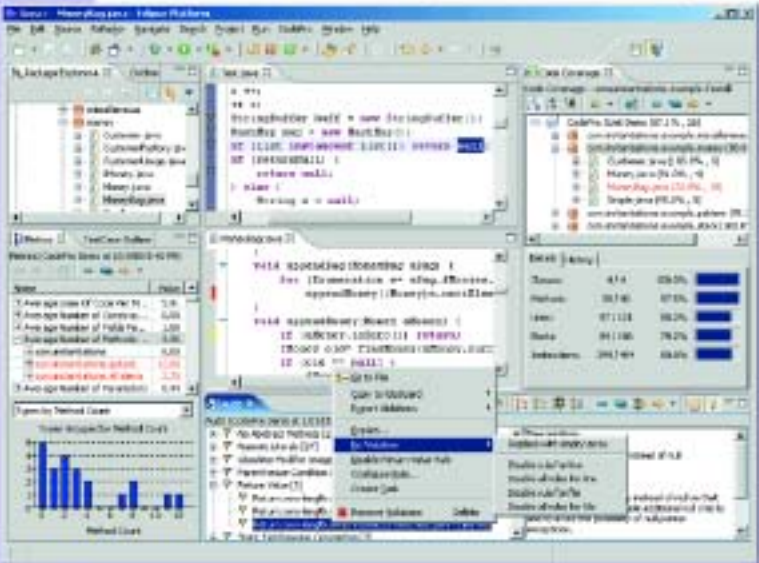
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Appistry: Memory Forms the Fabric of Messaging

Memory virtualization in Enterprise Application Fabric 3.0 enables queuing of events, triggers

BY EDWARD J. CORREIA

The third major release of Enterprise Application Fabric, Appistry's fault-tolerance software layer for C/C++ and Java applications, will enable developers to store state information across a network, and to build and queue events that trigger tasks, processes or transactions.

Enterprise Application Fabric (EAF) software divides application workload across multiple Linux and Windows machines, in theory boosting performance and adding reliability. Version 3, previewing this month, adds a so-called Fabric Accessible Memory (FAM) layer that virtualizes state information across the fabric. Pricing remains at US\$1,950 per server processor per year. General availability is set for January 2006.

"A simple example is a shopping cart," explained Sam Charrington, Appistry's vice president of product management and marketing, illustrating the benefits of version 3's FAM capability for an online shopping application. "This is a multistep conversation between two entities where state is involved," which he said normally requires developers to jump through lots of programming hoops to make the application appear stateless.

“With EAF, you don’t have to jump through those hoops,” and the redundancy of the fabric ensures that state information won’t disappear in the event of a hardware or network failure, he claimed. Another alternative to programmatically safeguarding state information, he said, is to store it in a database through a stateful bean or similar mechanism. “But customers say that’s an extra load and cost on their database.”

FAM VALUES

According to Charrington, the addition of FAM to the fabric enabled two other major enhancements in version 3: events and queuing. “By having this memory available in the fabric, events can be built and managed for tasks that have subscribed to events,” he said.

The events and queuing capabilities, he said, allow

applications running in the fabric to kick off downstream services based on something that happens in an upstream service.

“For example,” said Charrington, “in telecom, it’s common to have applications that process events,” such as those triggered by ordinary phone

calls. “Those are generated by different switches in the network. EAF would now allow them to place those events into a queue and

trigger different services, [which] can be notified to begin processing the queue,” such as for call tracking and billing services. ■

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Zeus: The Power to Cleanse the Unstructured

Informatica PowerCenter 8 integrates the great untapped data sources

BY EDWARD J. CORREIA

To the ancient Greeks, Zeus was the god of sky and weather. But to integration tools vendor Informatica, he's the integrator

of unstructured documents and cleanser of inconsistent data.

The company on Oct. 31 began limited shipments of PowerCenter 8, formerly code-

named Zeus, the latest version of its data integration platform that it says now can integrate unstructured documents such as those from word processors,

spreadsheets and presentation software with that of databases and other structured data sources. General availability is set for April 2006.

The need to integrate all of the data within an enterprise is of particular importance today, according to Informatica's vice president of product marketing, Ivan Chong, as companies struggle to comply with new government regulations. "And as people have been working to comply with regulations such as Sarbanes-Oxley, they have realized they need to document how they access that data."

Chong said that metadata for all integrated documents and data sources, which describes how data is accessed, is stored in a single repository.

ZEUS STRIKES DUPES

Though data cleansing is not new to PowerCenter, Chong said its capabilities have been expanded and are no longer optional; it is now a standard part of the platform. Enhancements include address and name cleansing modules from First Logic and Trillium, which "appear as native transformations," Chong said.

The modules bring new matching capabilities that allow the software to analyze chunks of similar data and evaluate whether they represent the same record. "For instance, this can make part numbers consistent across retail stores and eliminate product anomalies and drift."

Also new, Chong said, is the ability to create, import, compile and debug Java transformations. "Within PowerCenter you can call that transformation as data is flowing through the pipeline to cleanse a name or address [for example]." Transformations appear as boxes in a PowerCenter flow diagram, he said.

PowerCenter 8 also now can function across a grid. "This is a cost-effective way to scale up to larger processing capacity," Chong said. Processing is automatically spread out across machines when an increase in processing capability is required, he said. This is different from traditional grid processing, he claimed, which requires grid machines to be preconfigured. "[With PowerCenter 8], if one machine goes out or if the network goes out, the load automatically gets passed to the other machines," he claimed.

PowerCenter 8 runs on Linux, Unix and Windows and works with all major RDBMSes. Pricing remains at about US\$140,000 for an average deployment. ■

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Machines Have Capacity for Virtualization

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prises have farms of servers, they aren't doing much work.

"Most customers have lots of servers that are greatly underutilized, and the overall IT cost of these servers often increases lin-

early with the number of servers you've got," said Raghu Raghuram, senior director of strategy and market development at VMware.

He said the industry average is 10 percent to 15 percent uti-

lization on a server. VMware customers say a vast majority of their servers are running at under 10 percent utilization and almost none of them is over 20 percent utilization, Raghuram said. With the consolidation of

hardware comes reduced cooling and power requirements and fewer boxes to maintain, so the savings pile up quickly.

"The ability to consolidate low-load servers into a single box is an appealing proposition

for these folks," said Patrick Bohart, virtualization technology marketing manager for Intel. "Overall, it's all about TCO. If you can consolidate several workloads onto a single box, the overall management costs drop, heat loads drop."

However, it's not just a matter of putting all of your apps on a single server. Problems can arise when you run multiple apps on a single server. Resources that can't or shouldn't be shared, such as ports and bandwidth, will collide. If you try to run multiple Web servers on a single server, that means they will all be fighting for a single port 80. So these applications need to be walled off in their own virtual server.

VMware's latest releases are the ESX Server 3, a virtual server infrastructure for partitioning hardware and consolidating application workloads; and VMware VirtualCenter 2, software for managing a virtual infrastructure. Both are in beta testing now, with a Q1 2006 release planned.

The new version can detect a failed virtual server and restart it on an alternate host, and comes with automatic resource optimization for load balancing.

Developers can prepare their applications for a parallel world by supporting multithreading, according to Sun. "The more you go into a virtual environment, the more you share resources, so multithreaded apps become really important," said Graham Lovell, senior director of x64 servers in Sun's Network Systems Group. "It's more efficient to run parallel apps. In a virtualized environment, the way things are pulled together, if you are multithreaded, you will get the best performance over the machine."

Bohart added that Intel has been working virtualization into processor architecture to optimize system architecture around virtual servers, along with optimizations to I/O and controller architectures, which need to wall off the different virtual servers from each other in such an environment.

Raghuram believes that 64-bit computing, with its 16-petabyte memory limit (as compared with the 4GB memory limit of 32-bit processors), will also help drive virtualization. But for now, "it's a convenience, not a driving factor." ■



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SOA Tool Development Continues to Be Hot

BY ALEX HANDY

Tool makers have been busy releasing new utilities and development applications for creating and testing service-oriented architecture.

First up, Software AG announced the American release of the SOA Competency Center, a large tool set designed to assist organizations in the implementation and evaluation of SOA.

The SOACC includes SOA Discovery, SOA Readiness Assessment, SOA Achievement Report and a host of other tools that automatically evaluate the information transaction systems

implemented within an organization. SOACC also includes blueprints and tools for developing new services.

In addition, Software AG announced last month a new re-

pository called CentraSite, which it developed alongside Fujitsu.

Also announced last month was Solstice Software's Integra Enterprise 5.0 testing suite, available now.

Solstice said that Integra Enterprise 5.0 can pinpoint errors within an SOA implementation, and can help keep track of all the obnoxious little glitches that only network services seem to find.

Finally, Systinet announced last month the release of Systinet Server 6.0 for Java, Systinet Server 6.0 for C++ and Systinet Developer for Eclipse 6.0.

Server 6.0 for Java supports WS-I 1.1 and JBoss 4 application server.

Systinet Server costs US\$5,000 per processor, and Systinet Developer for Eclipse is freely available as a download from the company's Web site. ■

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VS 2005 GOOD TO GO

◀ continued from page 1

Standard, for professional developers working alone; Tools for Office, for professional developers building applications in Microsoft Office; and Team System, the role-based, life-cycle edition for architects, developers and testers.

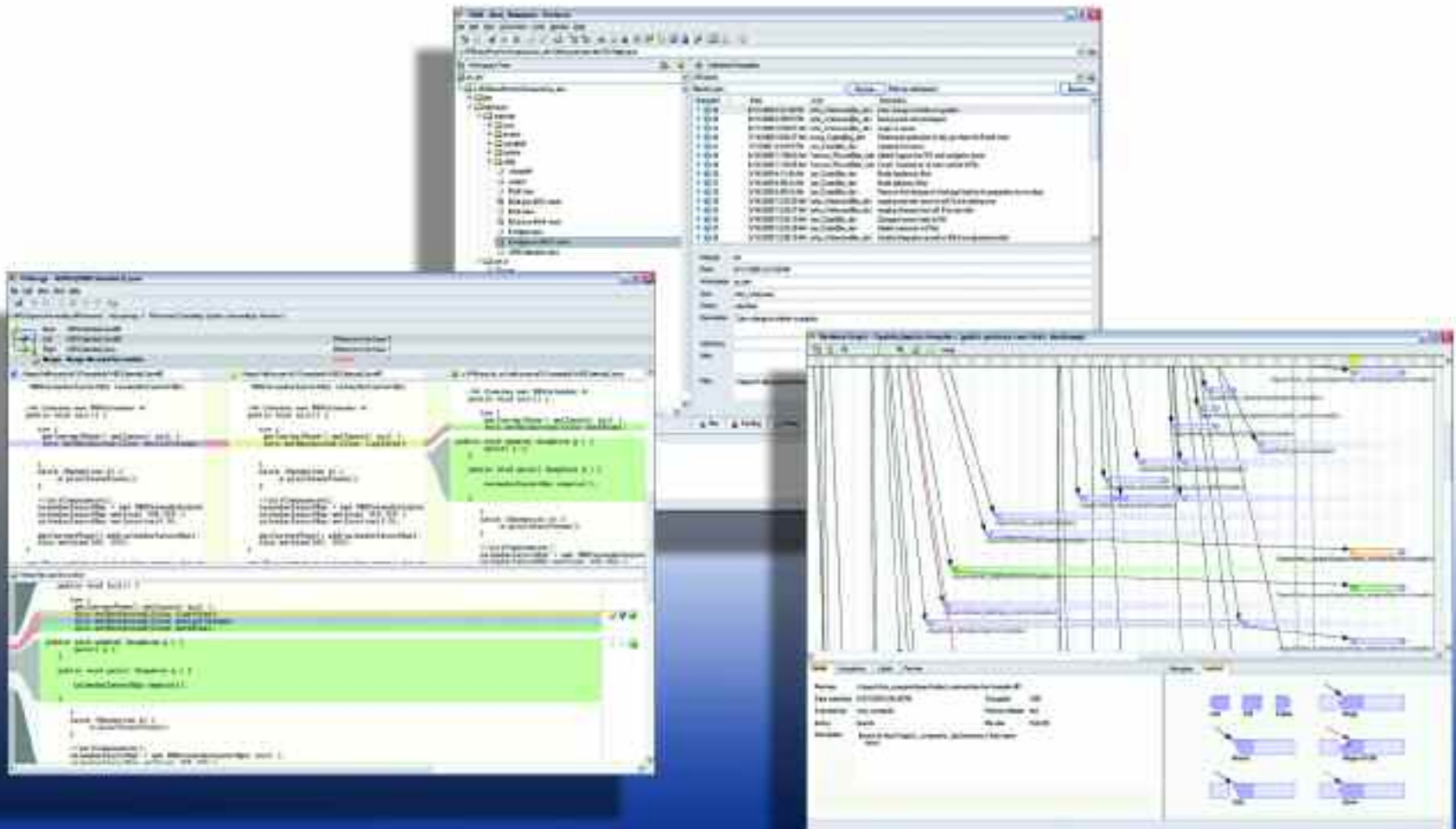
A key component of Team System, Foundation Server, will not be available until the first quarter of 2006, Microsoft has said earlier. The collaboration server on which Team System is based, Foundation Server provides build management, source code control and work item tracking tools, as well as the ability to produce project reports. But to soften the blow, it included with beta 3 of Foundation Server, released in September, a "Go Live" license that lets developers deploy production code.

The Nov. 7 launch was expected to include four editions of SQL Server 2005: Express, for students and hobbyists; Workgroup, for small businesses; Standard, for medium-sized businesses; and Enterprise, for business-critical applications.

Also expected at the November launch was the announcement of BizTalk Server 2006, replacing the 2004 edition of Microsoft's integration server. BizTalk 2006 will not be released to manufacture until the first quarter of next year, the company spokeswoman said. ■

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More Web Services Specs Emerge

← continued from page 1

nection between two systems.

The transaction is then handled by one of the other two standards, depending on their duration. WS-AtomicTransaction specifies concrete protocols for distributed atomic transactions using the two-phase commit abstract protocol. The completion protocol handles successful multistep transactions and rolls back in case of transaction failure. WS-AtomicTransaction is designed for short-term transactions with minimal data.

Conversely, WS-BusinessActivity is a protocol for longer-running activities using a compensation protocol. It may consume a number of resources over a period of time, and individual tasks may need to be completed before the overall activity finishes. It's designed for long-term responses and therefore operates asynchronously.

E-commerce already exists in many forms, from Amazon to iTunes. But those systems are heterogeneous, and all of the data transfers have to be done within the confines of the e-commerce systems, said Ari Bixhorn, director of Web services for Microsoft.

"Lots of transactions run internally within a business. But as soon as they reach across another platform boundary to another vendor, they can't get that transaction to work. E-commerce transactions take place within a given company's systems," he said.

Data exchanges with external systems are done via EAI or tightly coupled systems, said Nathaniel Palmer, chief analyst with the Delphi Group, an IT research group in Boston. "So this allows for out-of-the-box interoperability," he said. "It eliminates the need for middleware to be the mediator in doing transactions between systems."

Bixhorn agreed. "These enable communication of a transactional system across platform boundaries," he noted. "Before, we couldn't have transactions that went from one platform to another. Typically, transactional systems are tightly coupled and have to take place on the same platform. Some could be done with a great deal of coding, hard coded and very inflexible."

XML may be the universal

format for exchanging data between different platforms, but there wasn't a communications methodology for making the connection in the first place. What WS-Coordination provides is the protocol for that

exchange. "XML by itself doesn't give that portability," Palmer said. "You need to define a spec to navigate the two platforms. At a high level, there's the notion of a transaction. How you pass from one server to


another is not defined."


Web services have enabled communication across platforms, but handling a multistep transaction, with secure rollback in case of failure, has been lacking, said Bixhorn. These

three protocols are designed to address that.

It's up to each vendor to build its own support for the Web Services Transaction. Bixhorn said Microsoft plans to build support for the protocols into the Windows Communication Foundation, due with Windows Vista next year. ■

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Microsoft, Foes Settle on Cooperation

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Rhapsody music subscription service on MSN.

The settlement agreement also includes assurances regarding the design of the Windows operating system, including Windows Media Player. In addition, Real will gain access to a broad range of Windows platform technologies. Among other things, Microsoft will provide Real with expanded access and long-term licenses to Windows Media and security technologies.

Real brought an antitrust suit against Microsoft in 2003 in the United States. The company also has participated in proceedings initiated by the European Union (EU) and South Korea. Real will no longer participate in EU proceedings as part of the settlement.

The EU fined Microsoft more than \$600 million and ordered the company to produce a version of Windows that does not include its Windows Media Player, which opens the market for competitors such as Real and Apple.

Sun Microsystems: Sun's beef with Microsoft cost the latter \$1.6 billion. Microsoft agreed to pay Sun \$700 million to resolve pending antitrust issues and \$900 million to resolve patent issues. Microsoft and Sun further agreed to pay royalties for using each other's technology, with Microsoft making an upfront payment of \$350 million and Sun making payments when the technology is incorporated into its server products.

The settlement, announced in April 2004, also involved a joint focus on product interoperability across Sun and Windows environments. In May 2005, the companies reported they had achieved a single sign-on between Sun's Solaris operating system, Sun's Java Enterprise System and Windows Server. In addition, Intel and other companies are helping Microsoft and Sun develop the WS-Management Web services specification that defines a single protocol for managing hardware devices and operating systems.

"Sun didn't sue Microsoft for money; it sued because it was trying to protect future markets," said Pesik. "Microsoft wanted to be in the market Sun had created with Java. Sun saw Java as a means of innovating

independently of Microsoft. The question was who would own the market because it was a future market."

IBM: IBM did not sue Microsoft; however, it asked for retribution after U.S. District Court for the District of Columbia Judge Thomas Penfield Jackson stated in his ruling that IBM had been injured by Microsoft's "discriminatory treatment." To settle the matter, Microsoft agreed to pay IBM \$775 million in cash and extend \$75 million in credit for charging IBM a higher price for its Windows operating system and delaying IBM's receipt of Windows 95.

In addition to addressing the discriminatory pricing and overcharge claims, the settlement resolved other antitrust claims, including those related to the IBM OS/2 operating system and SmartSuite products. The resolution did not include claims for harm to IBM's server hardware and server services businesses. The companies are attempting to resolve those matters out of court.

Gateway: Gateway released its antitrust claims against Microsoft in exchange for \$150 million, which Microsoft will pay to Gateway over the next four years. Gateway also had been named by Judge Jackson as a company that had been harmed by Microsoft. Gateway, like IBM, pressed for retribution.

America Online: Microsoft reached a settlement with AOL Time Warner (now Time Warner) in May 2003. Per the terms of the agreement, Microsoft agreed to pay \$750 million to Time Warner; Time Warner agreed to drop the antitrust case it filed on behalf of its subsidiary, Netscape Communications, in January 2002. The companies also agreed to collaborate on long-term digital media initiatives.

Novell: Novell brought its own antitrust action against Microsoft, which was partially dismissed in June 2005. Novell asserted that Microsoft had monopolized the word processing and spreadsheet application markets, and made additional claims concerning Microsoft's anti-competitive practices as they relate to operating systems. U.S. District Court for the District of Maryland Judge J. Frederick Motz granted Microsoft's motion to dismiss the claims

involving the spreadsheet and word processing claims but denied the motion concerning the operating system claims.

Novell asserted that Microsoft had designed its operating system to be incompatible with Novell's WordPerfect word processing and QuattroPro (originally developed and later sold by Borland) spreadsheet applications. Judge Motz agreed that Microsoft's anti-competitive conduct as it related to the productivity applications was undertaken for the purposes of maintaining an operating system monopoly.

Be Inc.: In September 2003,

patent infringement concerning a patent he received in 1994 that links the Microsoft Excel spreadsheet and Access database programs. Amado purportedly developed the program in 1990 and tried to sell it to Microsoft in 1992, but Microsoft declined to purchase it. A federal jury in California issued a \$9 million verdict in favor of Amado because it found Microsoft had emulated Amado's software in Microsoft Office 95, which includes Excel and Access.

Microsoft paid \$60 million to Burst.com to settle outstanding claims, originally filed in

other things.

In June 2005, four California and Virginia companies got a nasty surprise when Microsoft filed complaints alleging distribution of counterfeit and/or illicit software and software components.

Microsoft also claims that it has filed a number of lawsuits to protect consumers from online fraud. Earlier this year, Scott Richter, CEO of OptInRealBig.com, agreed to pay Microsoft \$7 million to settle his case; however, both Richter and his company filed bankruptcy petitions, which make recovery uncertain.

In October 2004, Microsoft filed three anti-spam lawsuits under the CAN-SPAM federal law. The lawsuits were filed contemporaneously with similar lawsuits filed by Earthlink, Yahoo and America Online. Microsoft's complaint alleged the defendants spoofed MSN, Earthlink, Yahoo and AOL domains and used open proxies to route e-mails that illegally promoted products, services and get-rich-quick schemes in violation of the CAN-SPAM act. At that time, Microsoft had initiated more than 100 legal actions worldwide, including 75 lawsuits in the United States.

Microsoft settled a trademark case with Lindows.com in July 2004. The latter agreed to change its company name and the primary identifier for its operating system to Linspire, eliminating any possible confusion in the marketplace.

BOTTOM LINE

Microsoft is settling cases because it makes good business sense. Leaving the outcome of a case to a judge or jury is a risky and expensive proposition. When companies litigate in court, they may get everything they asked for or nothing at all. More likely, the resolution will involve some sort of compromise that is decided not by the vendor opponents but by judges who know the law but are not technologists, and juries composed of ordinary citizens.

Settling a case out of court enables companies to control the outcome. Settlement also brings to an end the kind of uncertainty that makes employees, partners, supply chains and investors just plain nervous. ■



'Sun didn't sue Microsoft for money; it sued because it was trying to protect future markets.'

—Eric R. Pesik, attorney,
Seagate Technology

Microsoft announced it had settled the antitrust case with Be Inc. Under the terms of the settlement, Microsoft agreed to pay Be \$23.25 million to end further litigation. The remainder of the settlement terms remained confidential. Be was subsequently dissolved.

ENSURING COMPLIANCE

As a result of the U.S. District Court for the District of Columbia's court order of May 14, 2003, Microsoft and plaintiffs in the United States v. Microsoft and New York et al. v. Microsoft cases are filing "Joint Status Reports on Microsoft's Compliance with the Final Judgments" in approximately three-month intervals that essentially report on Microsoft's Communications Protocol Licensing, OEM relations and Windows licensing terms, defaults as they relate to competing middleware, and the promotion of competing software that runs on the .NET Framework. The parties are working with a technical committee to ensure Microsoft complies with the judgment.

OTHER INFRINGEMENTS

Carlos Amado, a Guatemalan inventor, sued Microsoft for

June 2002, asserting patent, trade secret and antitrust claims. The agreement also included a nonexclusive license enabling Microsoft to lawfully use Burst patents.

Eolas Technologies won a \$521 million judgment against Microsoft for patent infringement concerning U.S. Patent No. 5,838,906, "the '906 patent," which is a broad browser patent controlled by Eolas.

Compression Laboratories, a subsidiary of Forgent Networks, also sued Microsoft for patent infringement, alleging that Microsoft had realized more than \$150 billion in revenues since 1998 from more than 30 products, including operating systems and applications, that made illegal use of the patent. Microsoft is just one of a long list of companies that Forgent has sued to protect its JPEG patents.

MICROSOFT SUES TOO

Microsoft is not just a victim of litigation; it's an instigator. In September 2005, Microsoft won a preliminary injunction against Google and Kai Fu Lee, a former Microsoft employee. The injunction prevents Lee from working on speech, natural language and search technologies for Google, among



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Enea to Embedded: Rally Around Eclipse

◀ continued from page 1

speaking of Wall's prediction. "Johan wants to do for software what SEMI did for semiconductors," he said, referring to Semiconductor Equipment and Materials International, the global trade organization that serves the chip industry.

So Wall is calling a truce. He's summoning the heads of the world's major embedded tool makers for a sit-down to figure out how to simplify and accelerate embedded development, and to work more efficiently together to help reduce duplication of effort.

"He wants to bring together the industry to examine what has to be done for the customers," said Hayes. "We're all in agreement that we can't continue doing things the way we're doing it. We want to try to get people together and work on the value-added things that differentiate our products."

But unlike SEMI, which was built from scratch, the embedded industry already has a rallying point: Eclipse. "That's the whole theme," said Hayes, to leverage technology that has proven appealing to the majority of the industry. "Large and small companies—this resonates with all of them, and will make the industry more sustainable going forward." Green Hills, MontaVista and Wind River were a few of the companies mentioned.

Also involved would be QNX, which saw the value of Eclipse early on in its brief history; QNX was among the founding members of what is now the Eclipse Foundation. "For embedded, Eclipse is appealing because [embedded tool makers] tend to be slimmer, so building an IDE on their own is not an option," said Derrick Keefe, director of R&D tools development at QNX. "Also, Eclipse is easily extensible, so they can integrate their own toolchain."

Keefe said that tool makers have come to realize that there's not much use in everyone doing the same thing. "There's a feeling that certain tools are becoming commoditized and there's no big differentiator for having your own," he said. "So we're better off working together to build something we can all use. Then



'There's a lot of the guts and glue that we're building ourselves,' says RTI's Hunt.

we can each go back and build additional tooling to value add on top."

"There's a lot of the guts and glue that we're building ourselves," said Gordon Hunt, principal engineer at Real-Time Innovations, referring to functions such as build and source-code management. "My hope is that Eclipse brings a lot of that to the table. RTI is an Eclipse add-in provider."

Other benefits of Eclipse for embedded tool makers, according to Mike Christofferson, Enea's director of product marketing, is standardization, which he said makes it future-proof. "In the history of embedded, you've had large numbers of companies offering large numbers of tools, all doing the same thing but with proprietary interfaces." And while certain products may have been open or extensible, most were not, which he said drove up costs and reliance on individual vendors.

"It represents a tremendous investment in a company's resources to standardize and maintain a tool set, and to build their own value-added tools only to discover that when they have a new project or silicon, their preferred tools vendor doesn't have what they need," Christofferson said. In such cases, he noted, companies are often forced to shop for alternative vendors. "Companies end up supporting multiple toolchains," he continued, multiplying costs for licensing fees, training, maintenance and other requirements.

"Having a common development environment reduces the learning curve, so as more companies move to Eclipse, there's

less training required to get more developers productive," added Hayes.

"Eclipse is an attempt at standardization so that tools from multiple vendors can play together and be learned once by users," said Christofferson. "That's the primary motivation. For vendors it's attractive because you know you're developing into a standard framework, so you have potential for being compatible with other tools." Partnering and project collaboration also are simplified because Eclipse has already specified how project committees will share information.

Newcomers to open-source development might at first have trouble adjusting to the idea of cooperating with the competition, said QNX's Keefe. "But once they get on a project, they usually shed their colors. They get into that [open-source] mindset and discover that the functionality they are working on is a commodity; there's a camaraderie that develops among the developers," and they simply want to help each other complete the work, he said.

Last but certainly not least, the Java-based Eclipse environment already runs on Linux, Solaris and Windows. "The history prior to Eclipse was to have different codebases across those platforms, creating a nightmare for [vendors] to create new fea-

tures, because they have to integrate those into three different codebases," Christofferson said. "With Eclipse, you're already cross-platform."

Such portability, said Enea's Hayes, also will be critical to addressing Wall's prediction of the silicon flood. "Portability

will be a key to the problem of developing code once; you want to make sure you can use it regardless of the platform. So sticking with Java or ANSI C will help."

"Eclipse just makes overwhelming sense," added Christofferson. ■

CDT CONFERENCE YIELDS POSITIVE RESULTS FOR FUTURE

BY EDWARD J. CORREIA

All 19 contributors to Eclipse's C/C++ Development Tools project met last month at the Ottawa headquarters of QNX Software Systems. The outcome was that version 3.1 will improve build management and debugging, and offer an easier method of building commercial releases based on the technology.

That's according to Derrick Keefe, director of R&D tools development at QNX, which founded the CDT project.

Keefe said that the project also will focus more closely on providing better, more concise documentation for the APIs, which he said will lead to simplified commercial implementations. "We'll also be changing [the environment's] underpinnings so it's easier to plug in different tools and allow CDT to be configured as developers

want to present to customers."

An interesting side benefit of the conference, Keefe said, was the interaction among developers working on the CDT, its parent Tools Platform Device project, and the Device Software Development Platform (DSDP) project being led by Wind River. "All the important people within the communities were there [to discuss] debugger requirements that will require interaction between all three projects," he said, adding that, historically, project developers have been heads-down and focused only on their own work. "I'm happy we're getting interaction between those Eclipse projects."

Keefe said that CDT 3.1 is expected to be ready in the first quarter of 2006, with a 3.2 version expected in time for the like-numbered Eclipse Platform release in July. ■

WiFi May Soon Outcover Cellular Networks

VoIP is force behind broadband build-out, research shows

BY EDWARD J. CORREIA

Developers struggling with bandwidth restrictions inherent with cell phone networks may soon have a broadband alternative without sacrificing ubiquity.

A study published late last month by Infonetics Research, a London-based telecom and data networking research consultancy, predicts that the number of organizations deploying voice over wireless LANs in North America will triple in the next two years.


The growth, the study shows, is being driven by the increasing availability of voice-enabling wireless infrastructure and VoIP-enabled wireless handsets. For its study, "User Plans for Wireless LANs: North

America 2005," Infonetics interviewed 240 small, medium and large businesses using wireless LANs or planning to use them by 2006. The analysis, which also included 450 surveys of wireless LAN adoption rates, covered five vertical markets.

Not surprisingly, the study revealed that security and privacy were the leading barriers to adoption, a fact that perhaps helped to explain that VPN client software topped the list of implemented applications. Also popular were backup and applications for asset and RFID tracking. The researcher further predicts that 57 percent of small, 62 percent of medium, and 72 percent of large corporations in North America will

be using wireless LANs by 2009, again spurred by infrastructure growth.

As if to drive home the point, one week after the Infonetics study was published, three North American cities announced the completion of WiFi networks. Claiming to be among the country's largest is the 40-square-mile network in Rio Rancho, N.M. Also, Ferrysburg and Spring Lake have joined the network of neighboring Grand Lake, Mich., to form a WiFi network that spans all three cities end-to-end. For a map of WiFi coverage areas around the world, go to www.wigle.net. For a global list of WiFi hotspots, go to www.wifi-hotspotlist.com. ■

The background of the advertisement is a photograph of an office environment. On the right side, a red ergonomic office chair is partially visible. In the foreground, the bottom of a black desk is seen. The floor is covered with a grey and blue patterned carpet. On the left side, a hallway with white walls and doors extends into the distance. The overall lighting is soft and indoor.

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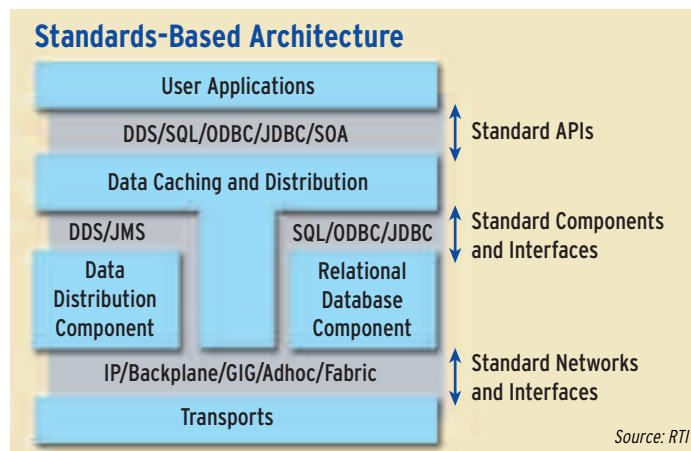
RTI middleware maps relational calls to IDL real-time description language

BY EDWARD J. CORREIA

Use an Oracle database to control a fighter jet? Unthinkable. But according to embedded systems developer Real-Time Innovations, such a scenario is now possible with the release earlier this month of SkyBoard 3, the latest version of its publish/subscribe middleware that now permits developers to control distributed real-time applications through standard SQL interface calls.

According to Gordon Hunt, RTI's principal applications engineer, SkyBoard 3 integrates the company's Network Data Distribution Service (NDDS) middleware with Oracle's TimesTen In-Memory Database and adds new synchronization technology that permits SQL commands to control data in real time.

"In embedded tracking and control and in navigation systems, you're focused on latency; you don't normally think [about using a] database," said Hunt. "We now have an integrated



New middleware lets SQL developers control databases in real time, RTI says.

framework that seamlessly maps IDL semantics with SQL semantics," he said, referring to OMG's Interface Description Language API for calling CORBA services used by NDDS. This now permits developers to access sources of information through standard SQL calls and ODBC that were once only accessible through IDL.

The solution works, Hunt said, by converting SQL table

names to topic names in the Data Distribution Service (DDS). "Table schema map to the IDL data structure," he further explained. This gives developers the ability to build distributed applications using the data manipulation APIs of choice. "Database guys know SQL. Embedded systems guys know IDL and message-based paradigms," he said.

So, for example, one devel-

oper might code an application to collect and publish data from a sensor. "And someone on the other end can write SQL calls to take in the data or combine it any way they want. They don't have to know anything about DDS, just SQL."

SPRAWLING DATA

Also new, Hunt said, is the ability to distribute and synchronize a database across a nearly limitless number of nodes. "The database becomes a collection of tables. Copies of tables of interest to each node are distributed to those nodes, and that becomes the database. It looks like it's resident, but actually it's spread around all the nodes," he said. "You can make a SQL query and change a row, and it replicates to all the other nodes." The number of nodes is limited by architecture and infrastructure, he said, not by SkyBoard. The software runs on Linux, Solaris and Windows as well as several embedded operating systems.

Though Oracle TimesTen was selected for its high performance—it's rated at upward of 100,000 transactions per second per node—Hunt said any combination of SQL 92-compliant databases can be used, either through ODBC or JDBC. The solution also has been tested with MySQL and other databases, he said.

A key benefit of the new release, Hunt said, is its real-time synchronization capability. "Let's say you have table A on 50 nodes, each monitoring changing information such as a target position. You need to be able to update everybody's tables and resolve conflicts to keep everything congruent." This is done, he said, by using the quality-of-service features in DDS on a per-table basis. "I can treat table A different than table B," he said.

SkyBoard 3 is available now starting at US\$75,930, including all software and four days of training. ■

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IN TEAM THEY TRUST

MORE THAN 60 PERCENT PLAN TO ADOPT MICROSOFT'S LATEST IDE, SURVEY FINDS

BY JENNIFER DEJONG

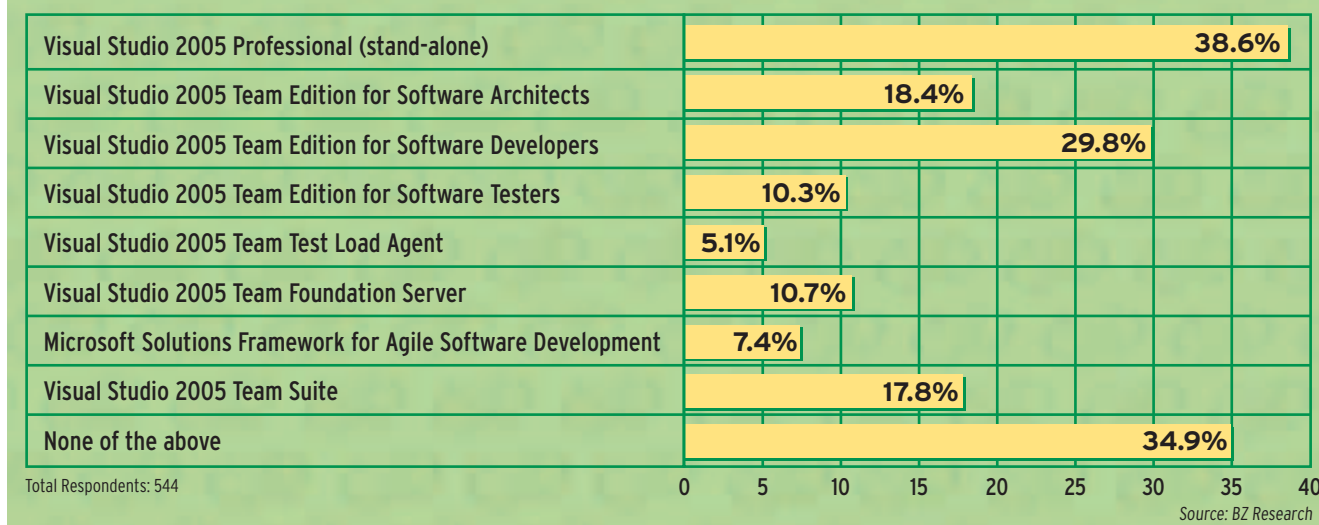
Most development shops are not taking a wait-and-see attitude toward Microsoft's Visual Studio 2005 Team System, even though it was expected to be released only last week. Some 60 percent of SD Times subscribers said they plan to adopt Team System for production code.

That is the key finding of a survey conducted by BZ Research, a subsidiary of BZ Media, SD Times' parent company, in mid-October, a few weeks before Microsoft's expected Nov. 7 launch of Visual Studio 2005, SQL Server 2005 and BizTalk Server 2006.

Twenty percent of respondents said they plan to adopt the life-cycle edition of Visual Studio 2005, which includes tools for software architects, developers and testers, within six months; 14.4 percent said between 6 and 12 months, while 9.5 percent plan to wait one to two years, the survey found.

The survey, which received a response rate of more than 5 percent, was sent to about 10,000 SD Times subscribers, who are software development managers. Of the 558 respondents, 68.4 percent write about 25 percent or more of their code in .NET, the survey found. But because the invitation made it clear that the survey was about Team System, and that SD Times was looking for anecdotal and trend information from .NET developers, survey respondents may have been self-selecting.

Which Visual Studio 2005 tools do you plan to adopt within the next six months?



dotal and trend information from .NET developers, survey respondents may have been self-selecting.

TRUST A 1.0 RELEASE?

The survey asked those who had used the Team System beta or release candidates what they thought of it. Respondents offered a range of reactions from "Microsoft got it right," "Greatly improved coding" and "Fantastic development system that should increase productivity quite a bit," to "Upper management is concerned about trusting a

1.0 product for development," "Somewhat overwhelmed by the complexity" and "Not even close to Eclipse."

A few key themes have emerged from their comments: Team System is an impressive set of tools, but most aren't mature yet. What's more, the respondents said, the price tag is too high, support for apps written in earlier Microsoft technologies remains an issue, and development managers will need a good reason to abandon established modeling and testing tools designed for Visual Studio by third-party software

developers in favor of more recent efforts from Microsoft.

"I view MSBuild [in Team Foundation Server] and the built-in unit testing [in Team Developer] warily," wrote Luke Melia, a software development manager at New York City-based cable television network Oxygen Media. "We have had great success with [the open-source build tool] NAnt and [open-source unit testing tool] NUnit," he added. "But the integrated static code analysis [in Team Developer] simplifies our development process a bit."

How important are these parts of Visual Studio 2005 Team System to you and your development team?

	1 Not Important	2	3	4 Very Important	Don't Know
Visual Studio 2005 Professional	13%	5%	12%	57%	14%
Class Designer	13%	15%	29%	26%	17%
SOA Modeling	21%	17%	24%	14%	24%
Deployment Design	16%	15%	27%	23%	19%
Static Code Analysis	13%	14%	32%	20%	20%
Profiling	15%	15%	31%	19%	20%
Dynamic Code Analysis	14%	14%	29%	24%	19%
Unit Test	13%	12%	25%	34%	16%
Code Coverage	14%	14%	28%	23%	21%
Test Case Management	14%	17%	28%	23%	19%
Load Test	17%	16%	28%	22%	17%
MSDN Premium Subscription	19%	13%	20%	31%	16%

Total Respondents: 540

Source: BZ Research

'SOLELY LACKING'

A survey respondent who chose to remain anonymous said that he plans to continue using the IBM Rational XDE modeler for Visual Studio 2003. "Modeling tools in Team System are not mature enough," he wrote. Tad Anderson, a software architect at Corporate Webbing, a Mount Joy, Penn.-based consultancy, made more pointed remarks. "Team System has a lot of great improvements for developers, testers, project managers, and system architects. But it is still sorely lacking for software architects," he wrote. "Not supporting UML is a big mistake," he added in a follow-up e-mail interview, referring to Class Designer, Microsoft's new tool for visualizing an application's classes and generating the code associated with them. Class Designer (included in Team Architect, Team

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IN TEAM SYSTEM THEY TRUST

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Developer, Team Tester and Visual Studio 2005 Professional Edition and above) is based on Microsoft's domain-specific language, not on the industry standard Unified Modeling Language. "Ignoring the current industry standards once again was wrong," wrote Anderson.

But most survey respondents aren't certain about their modeling tool plans. Asked whether they use non-Microsoft software modeling tools for .NET development (other than as part of Visual Studio 2005 Team System), 32.2 percent said yes. Asked whether they will continue to use those non-Microsoft modeling tools for .NET development, 65.8 percent said they don't know yet, while 20.7 percent said, "Yes, as a stand-alone product."

ADOPTION SCENARIOS

BZ Research asked survey takers which tools within the Visual Studio 2005 family they plan to adopt within the next six months. Visual Studio Professional Edition led the pack with a 38.6 percent share, followed by Team Edition for Software Developers, which earned a 29.8 percent share. Only 17.8 percent said they plan to adopt the entire Team Suite (which includes Team Architect, Team Developer and Team Tester).

Foundation Server, the underlying collaboration server on which Team System depends, took only a 10.7 share. "We will consider [adopting] Team Foundation Server only after it has been available for some time and proven itself stable and well-designed," wrote Oxygen Media's Melia, noting that the company plans to adopt Team Developer immediately.

Team Foundation Server will not ship until early next year, Microsoft has said earlier. But it earned praise from survey respondents who have worked with the beta.

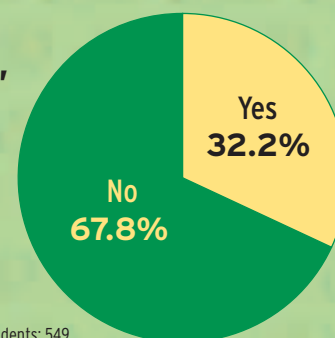
"I'm impressed by the new features of Team Foundation Server, like how it encourages proper program development and allows you to specify your own standards/processes. But I am somewhat overwhelmed by the complexity," wrote Rick Crawford, manager of Web technologies at Sky Financial Group, a financial services firm based in Bowling Green, Ohio.

"Team [Foundation] Server is a first-class source code management toolset," wrote Chris Henry, president of BizSpeed, an Atlanta-based application development services firm.

There is only one reason why Russell Albert, a senior architect at Lin-

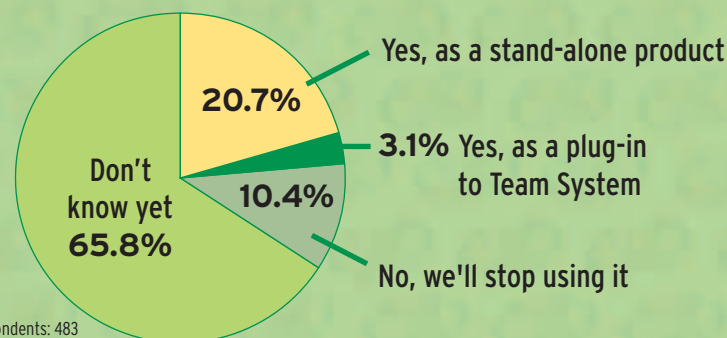
▶ continued on page 38

Other than as part of Visual Studio 2005 Team System, did you and your team use non-Microsoft software modeling tools for .NET development?



Total Respondents: 549

Will you continue to use those non-Microsoft modeling tools for .NET development?



Total Respondents: 483

Source: BZ Research

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IN TEAM SYSTEM THEY TRUST

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colnshire, Ill.-based HR outsourcing firm Hewitt Associates, is hesitating to adopt Team System. "We need to make a business case to introduce this product into our firm

given the cost," he wrote.

Visual Studio 2005 Team Edition for Software Architects starts at US\$5,469 per license, for one to five licenses, as do Team Edition for Software Developers and Team Edition

for Software Testers. Team Suite, which includes all three, starts at \$10,939 per license, according to a Microsoft spokeswoman.

Other developers expressed cost concerns, too. "[Team Sys-

tem] is the best product ever made by Microsoft. But the price is overkill. And I don't think we can afford it," wrote Giuseppe Turitto, an application developer at The Bank of New York based in New York City.

One respondent said Eclipse was a more cost-effective alternative. "Why spend big on [Team System] when open-source and Eclipse plug-ins are so much cheaper, or free?" wrote Stu Shannon, a staff software engineer at Illumina, a San Diego-based company that develops technology for genetic testing. "It is not even close to Eclipse," he said, in response to the open-ended survey question that asked developers who had worked with the Visual Studio Team System beta or release candidates what they thought of it. Questioned by e-mail whether his team worked in Java or .NET, Shannon did not respond.

WAITING FOR 'MAGICAL TOOL'

Respondents also raised concerns about Team System's ability to contend with older code.

"Managers are waiting for that magical tool that converts all legacy ASP and VB apps to ASP.NET and VB.NET with no rewrite or modification of code," wrote David Harding, a systems engineer at the South Dakota Department of Human Services, in Pierre. "They don't want to start any projects from scratch."

Team System has a lot of potential, echoed Bill Bither, president of Northampton, Mass.-based Atalasoftware, which makes imaging toolkits for .NET and ActiveX. "But it is inflexible in that we are forced to compile to .NET 2.0 only. Some of the Team System features such as code coverage and profiling work only in managed code," he wrote.

Others would simply rather wait until Microsoft gets all the Team System kinks worked out.

"We have had bad experiences being the first ones on board [with any technology]," wrote one respondent who did not offer his company name. "We have found that if we wait all the other users can work out the bugs and issues," he said. "Upper management is concerned about trusting a 1.0 product for development," wrote one respondent who chose to remain anonymous.

But most others aren't waiting. Microsoft's long-awaited delivery of Visual Studio 2005 apparently will have a swift uptake. ■

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EDITORIAL**Resistance Is Futile**

Last week's release of Visual Studio Team System completes a change in the dynamics of the software development tools industry that's been in progress for about three years: The bifurcation of the industry into two competing toolchains—one based on Visual Studio, the other on Eclipse. A related shift is the drive from productivity tools to broad application life-cycle management platforms.

The beginning of the movement was IBM's development of the Eclipse open-source tools framework and subsequent release of the framework to a truly independent consortium, the Eclipse Foundation.

Unlike many open-source communities, the Eclipse Foundation was unabashedly pro-business. Largely because of that, Eclipse has seen tremendous success, overshadowing nearly every other open-source and commercial tools platform. Competing toolchains, such as Sun's Java Studio family, are either marginalized or forced to adapt.

As the Borg, the bionic foes of "Star Trek," would say, "Resistance is futile."

And indeed, in some areas of software development, the assimilation is complete, or nearly so. The embedded tools market, for example, is now overwhelmingly dominated by Eclipse. Every major platform maker, from Wind River to Green Hills, from Enea to Palm to Nokia, with the exceptions of Microsoft and Sun, has thoroughly embraced Eclipse. If you're an embedded shop that uses commercial tools, Eclipse is just about the only game in town.

Microsoft's Team System isn't a tools framework, and its design isn't guided by a community of partners. Instead, it's an extensible set of tools created specifically to support Microsoft's runtime platforms, and its direction is determined solely by Microsoft. However, as with Eclipse, resistance is futile here as well. Software companies in the Windows/.NET space are turning their stand-alone tools into Team System plug-ins as fast as they can. And as with Eclipse, the movement is seemingly inexorable.

Which toolchain will developers choose? Most of the time, the decision will be a simple one. If you're committed to following the Microsoft path, with Windows Server, Windows Vista, SQL Server, BizTalk Server, SharePoint Server, Exchange Server and so on, you'll likely use Visual Studio Team System. If you are following a different path, you'll probably standardize on Eclipse-based tools.

But of course, while both Eclipse and Team System support application life-cycle management, neither invented that concept, and neither is a best-of-breed ALM solution.

Instead, companies such as Borland and IBM Rational continue to be leaders in soup-to-nuts industrial-strength ALM, while powerful, mature offerings from firms such as MKS, Quest, Perforce, Seapine, Serena, Telelogic, Wily and many others will continue to appeal to development teams looking for a fuller solution than either Eclipse or Microsoft can offer.

Of course, those companies, too, are coming to terms with Eclipse and Team System, through partnerships, plug-ins and integration bridges. ■

**Software Development:
A Discipline, Not an Art**

For years, companies producing software have treated the development process as an art. Unlike the other operations of the company that are monitored, managed and measured using formal business process, software development projects are often the result of ad hoc decisions and activities, with few metrics available to gauge the status or efficiency of a development effort.

The result? By not managing software as the critical business asset it is, companies face escalating development costs, mounting code quality and security issues, and continuous product delays. This art-based, ad hoc approach to software development impacts a company's top and bottom line, erodes its ability to compete in a fast-paced market, diminishes its brand, and weakens its reputation with prospects, customers, partners and investors.

'ART' HISTORY

The root cause of why companies revert to treating software development as an art stems from the traditional way in which applications are developed over time.

Typically, the first release of a software product is built on an understandable and orderly architecture, reflects customer requirements and is created by a stable and dedicated team of developers and managers. These greenfield development projects may not rely on formal processes and tools, but the project itself tends to be organized, and the codebase is built from scratch to meet the initial product requirements.

The real problems arise with subsequent releases. Ironically, over time development projects are the victims of their own success. With a successful application launch, management and customers will demand a continuous stream of updates that add new features and capabilities to the once relatively elegant and simple codebase. Follow-on development efforts must overcome three major hurdles:

new development teams, an existing code and constantly shifting requirements.

By the time the second or subsequent releases of an application gain momentum, the original development team has disbanded.

The new team is usually composed of a few holdovers as well as new coders—both internal and often others from offshore service providers—many of which have no knowledge of the original architecture, design decisions and codebase. And instead of the ability to create a pure architecture that reflects current project requirements, the new team must modify the application or create new modules on top of an existing, increasingly bloated codebase.

In addition, with an invested customer base requesting bug fixes and new capabilities, and an internal marketing organization attempting to influence the feature set to out-deliver the competition, the project must deal with constantly morphing system requirements.

With an increasingly complex application and compressed project schedules, and no way to monitor and manage the process, the codebase quickly erodes in quality. The ever-present pressure to meet corporate deadlines leads to shortcuts and other bad coding practices.

In order to get a release out the door, well-meaning managers and developers eschew the initial more disciplined approach and rely on process and activities that look more like art. Software defects, security vulnerabilities and project delays plague subsequent application releases. And after each release, the next development team faces an even more fragile, dependency-riddled codebase full of complex, hard-to-understand code.

BREAKING THE CYCLE

Since most development projects do not start from a blank sheet of the paper, how can

companies break this cycle? Organizations need to replace the art of coding with the discipline of software development. In other words, companies need to start managing software assets in the same way that they manage other business assets. They need to introduce and embrace a more formal way to manage the entire development process.

Historically, companies have avoided going this route.

Why? Because managers felt the solutions the industry offered or proposed were too time-consuming to implement and too costly to justify given their well-known limitations.

And managers knew that any attempted imposition of formalized processes without a means to monitor and manage them doomed efforts to overhaul software development.

But now, the situation is ripe for change. The top- and bottom-line impact of bloated, fragile code that is a result of this inefficient, art-based process is becoming impossible to ignore. A codebase that may have once contained a few annoying bugs that customers and the company were willing to live with has now become a business liability and a playground for global hackers.

Even nontechnical, senior executives can't avoid this situation anymore. They can feel directly how low-quality software degrades their business, and they are constantly reminded of the price of poor coding from the never-ending stream of high-profile media reports of failed software.

Executive interest to improve the development process, coupled with the introduction of new ways to analyze and improve code, means that companies are now motivated and capable of moving to a disciplined software development approach.

But to be successful, companies must get their developers to buy into the discipline approach. Coders need to

Djenana Campara

understand how a discipline-based development approach will improve their work life by helping them write code that adheres to corporate guidelines; reducing the monotony of testing for errors, tracking down defects and implementing fixes; and improving their coding quality and productivity.

In addition, by enabling their managers to better gauge the status of a project and the impact of requirement changes, developers will have a better understanding of how realistic project deadlines are.

The payoff? One large development corporation reports that embracing a discipline-based approach has cut the time its developers need to understand an application's context in half. Another company says that a code analysis that typically required one week now takes only one hour.

With both managers and developers buying into discipline-based development practices, companies can expect to deliver high-quality, secure software for a lower cost and at a quicker pace. ■

Djenana Campara is founder, CTO and chairman of Klocwork, which sells code quality assurance and security testing tools.

DON'T JUST LOOK AT COST

The argument by Charles Stevenson in his Guest View ["North American Developers Must Innovate to Keep Jobs," Oct. 15, page 32] could equally apply to his company's product line.

Gupta Technologies, his employer, makes SQLBase, a relational database. Why should I, a U.S. programmer looking to cut development costs, pay for SQLBase when I can use a free, open-source relational database? Why should I use Gupta Team Developer or Report Builder when I can use similar free offerings from Eclipse? I don't even have to drive 50 miles for them, as he suggests in his article.

I'm sure Stevenson would argue that it doesn't make business sense to only consider the sticker price, and that Gupta's products offer unique features that will save time and money over free offerings. But when it comes to software development, he claims that U.S. programmers are interchangeable commodities best measured by the bottom line.

I don't think SOA will be a magic bullet for U.S. developers, and I don't think U.S. programmers are at a disadvantage because they have expertise in

Java or C#. I think their ultimate downfall will be that shortsighted executives overlook U.S. programmers' long-term advantages in favor of short-term profits.

Ken Collins

Software Developer

WHAT FAILED?

Editor's note: The SD Times newsletters continue to generate lively discussion and debate. In the Nov. 1 Test & QA Report, Lindsey Vereen, editor of BZ Media's Software Test & Performance magazine, wrote that methods other than record and playback should be investigated when implementing test automation.

I am responding to your article "Test Automation: More Than Record and Playback." The author proposes spending more time building up regression infrastructure instead of maintaining record and playback. But as the author states, there is a huge ramp-up needed, and the automation effort becomes a project that can rival the project being tested. Failures during test always beg the question: "Is it the test or is it the application?"

I have worked with the heavy, home-grown regression

infrastructure. The tool would allow me to write tests off of specification, but had no recording capability and there was no debugging and rewriting tests. It would have worked, but I was one of only a few people with the understanding and ability to organize the data and write the tests so they would be maintainable going forward.

I am currently pursuing automated testing at a new company. The tool I am favoring at this time highlights ease and accuracy of recording. The philosophy I am going to pursue is, if the test breaks, it needs to be easy to recreate. When a test fails, I don't even need to debug the test; I just manually run through the scenario, doing a manual test. If anything major comes up, I will catch it during the manual pass. If it was the test that was out of date, now I have an up-to-date test. Debugging tests is a time-killer and happens at the worst time, right before you're trying to ship the product.

Jeffrey Benton

QA Manager
Servergraph

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SD Times

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Why Are Companies Outsourcing Software Development?

The bottom line. Companies are farming out software development contracts most often to save money. That's according to the "Enterprise Development Survey 2005: Summer," a survey of nearly 400 development managers published in September by Evans Data.

The need for special expertise took a back seat to financial concerns, which the researchers said represents a drastic change from previous surveys.

To penetrate a foreign market .3%

To complete emergency projects on time 5.9%

To offload maintenance tasks 6.8%

Other 17.5%

To accelerate development 8.9%

To avoid hiring staff not always needed 13.9%

DATA WATCH

To save money 28.1%

To gain expertise not available in-house 18.6%

Source: Evans Data

Coordinating the Evolution of Java

It's interesting that the release of Java 5, with all of its new language extensions and library updates, seems to have had little or no impact on the Java world. Though I'm sure that some shops have embraced the new version of the language wholeheartedly, most programmers are simply ignoring the new language. Just look through any of the Java magazines, and you'll be hard-pressed to find a generic class or an example of the new loop syntax outside of an article that's describing how that feature works.

Part of the problem is the huge teetering edifice of open source. One side effect of 100 programmers working on the same project with little or no real coordination is that none of the contributors knows how the whole program works. Consequently, when it comes to something as significant as a major rewrite to bring a project in line with the current language spec, nobody has either the will or the knowledge to do it. The result is stasis. (Truth to tell, some of the open-source code is so bad that it would have to be discarded completely and rewritten from scratch.)

The nobody-understands-the-code problem isn't limited to open-source projects, of course, but when our own code is based on one or more open-source frameworks that aren't Java 5-compatible, the

impetus to moving our own code to Java 5 is not exactly overwhelming.

Meanwhile, however, Sun has been diligently moving forward to a new Java release scheduled for early next year, and many of the new standards that will be incorporated into the language leverage these new features. Eventually, it will simply be impossible to ignore the new language, if for no other reason than the new versions of libraries that many of us use on a regular basis, such as EJB and JDBC, not only leverage new language features—primarily annotations and generics—but are also much easier to use as a consequence. That is, there will be a compelling argument—easier construction and maintenance—for making the move.

There's a new version of Java (called Mustang) due out in a few months, and it can't hurt to get prepared for what it will offer. The best way to track these changes is to monitor the various Java Community Process initiatives that will be part of the new release. The Umbrella Java Specification Request is JSR 270 (jcp.org/en/jsr/detail?id=270), which has pointers to the other JSRs that constitute the new-version specification. You'll also

want to monitor the “communities” on java.net (community.java.net), particularly The Java Specification Requests Community (community.java.net/jsr).

Unfortunately, some of the JSRs that have the most impact on our actual work are not part of the Mustang JSR.

Consider annotations. Though the

word from Sun is that there will be new language changes in Mustang, that's true only in the sense that there will be no syntax changes that affect the compiler. Annotations—introduced in Java 5—effectively provide a way of adding keywords to the language without impacting Java's syntax. For the most part, annotations improve your code. It's vastly simpler to declare a method as `@remote` than it is to manually supply all the infrastructure needed to support RMI. However, `@remote` is now effectively a keyword in the language—a new sort of access privilege, and we need to know about it to write effective Java.

Though almost every new JSR introduces some sort of annotation, there is no one place where all of the new annotations are gathered; rather, they're defined in the individual JSRs that intro-

duce them. The one glimmer of sanity is JSR 250 (Common Annotation for the Java Platform), which defines “a small set of common annotations that will be available for use within other specifications. It is hoped that this will help to avoid unnecessary redundancy or duplication between annotations defined in different Java Specification Requests.”

The problem with this approach is that JSR 250 is far from a complete compendium of the annotations scattered through the other JSRs. More to the point, cataloging and coordinating annotations is a process, not a specification. The Java Community Process is not set up for this sort of thing. We don't need an initial-draft, final-draft, released-standard process; we need a perpetual committee to which annotations are submitted, which must approve those annotations before they can be incorporated into the language. We need a clearinghouse, not a standard. We also need a catalog that collects all the annotations, but a catalog is not a specification—it's a living thing that constantly evolves.

Let's hope, then, that an annotation-management process is set up within the JCP before Java annotations descend into the same chaos as business-related XML. This early we have a chance, but if we wait too long, that chance will slip away. ■

Allen Holub is an architect, consultant and instructor in C/C++, Java and OO Design. Reach him at www.holub.com.




Java Watch

Allen Holub

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authorities and credit card companies. At the time, the Secret Service said more than 100,000 people had been compromised.

LexisNexis tells
of tenfold hike in
—44— victims

Sealant unit, part of Dayton, Ohio-based LentsNews. LentsNews is a Reed subsidiary.

Seisint provides data for Matrix, a crime and terrorism database funded by the U.S. government, which has raised concerns among civil liberties groups.

to legitimate customers. It stressed that neither LexisNexis nor the Seidant technology infrastructure was breached by hackers.

Kerr said the company has since ensured that the system is watertight by improving lo-

who were notified, law enforcement officials have identified 10 who investigators believe may have been victims of identity theft. He said it is unclear whether those possible thefts are related to the breach at LexisNexis.

Investigators said only three of those people appeared to be the victims of fraud.

But Sanford said LexisNexis had initiated the review and notified potential victims.

"We're going to fix this," said

Reed Elsevier played down the effect of the breach on profits, reaffirming its target higher earnings and at least 10 percent growth in revenues excluding acquisitions.

The breach at Seisint is the second of its kind at a major information provider in recent months. Rival data broker ChoicePoint Inc. announced last month that the personal information of 145,000 Americans may have been compromised in a data leak.

Continued From Page B1

John Shaughtnessy, Visa's senior vice president of risk management.

The new standards spell out detailed security requirements for processing of card processing, databases, e-mail, access points, Web applications, walls that restrict out internal networks.

Many of the rules are yet they are common example, merchants update in the software "dirt" issue to fix security programs as they

Merchants and of credit cards are also data from their system new standards. They stored in the first place gleaned from the huge bank of plastic credit, criminals to counterfeit.

One company said

Associated Press

SAN ANTONIO—A suspected hacker has tapped into a U.S. military database containing Social Security numbers and other personal information for 33,000 Air Force officers and some enlisted personnel, an Air Force spokesman said.

As many as half of the officers in the Air Force may be affected, but no identity theft had been reported as of early yesterday, said Tech. Sgt. James Brabett, a spokesman at Randolph Air Force Base in San Antonio. The case is under investi-

The case is under investi-

of products and business development, says the company had maintained the information to spare clients the trouble of providing it for each transaction.

appealed to Vinnikov's rules. "They stand your logic."

for burned by U.S. officials.

has been an increase in hacking attacks generally, and on credit card caches specifically, because of the devaluation of a dollar.

Prosecutors said, "just fail" whether Mr. Park knew. Mr. Park invested in a Canadian company son of a second unnamed prosecutors said.

Without a Trace

COMPANY/ DATE MADE PUBLIC	NUMBER OF PEOPLE AFFECTED	AFFECTED DATA	SECURITY BREACH	RESPONSE
Pols Ralph Lauren April 14	As many as 180,000 customers who held GM- branded MasterCard	Credit card data	Not available	Issuing bank, HSBC, notified customers
Boston College* March 17	Database included records for 120,000 alumni	Addresses and Social Security numbers	Not having internal computer network outside for	Notified affected alumni
	110,000	Social Security numbers and	Unauthorized access to email	Notified federal authorities and customers, limited customer access

The San Diego Union-Tribune • Friday, April 25, 2008

ASSOCIATED PRESS

NEW YORK—Data apparently stolen from the popular clothing retailer Polo Ralph Lauren Corp. is finding banks and credit card issuers to notify thousands of consumers that their credit card information may have been exposed.

London-based HSBC Holdings PLC has begun notifying holders of the HSBC

"We're being cautious, and we want to protect our customers' accounts, so we're notifying them," he said.

Neither Cohen nor spokesmen for MasterCard International would identify the retailer by name.

The security breach was reported in *The Wall Street Journal*, which quoted "people with

USA Inc. and MasterCard — the nation's largest credit card associations — were reported to be dealing with Polo Ralph Lauren on the matter.

MasterCard said in a statement that it was informed of a possible security breach "of transaction data associated with a U.S.-based retailer."

ry. Citigroup Inc., the nation's largest financial institution, confirmed that it was "notified."

The New York-based bank said it takes "appropriate action" when notified by Visa or MasterCard of potential security issues.

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The Silence of the Lambdas

Although I'd been using the betas of the Whidbey languages for some time, I've recently had my first assignment that involved really cranking out C# 2.0 code. I noticed something very interesting about "anonymous delegates with outer-variable capture," or "lambda," functions.

Unlike Java, C# supports the idea of a type that consists of a single strongly typed function signature that is not (visibly) wrapped in a class. Apart from object-oriented niceties of type and behavior, delegates are essentially recognizable as function pointers.

In C# 1.0, one instantiated a delegate just as if it were any other type, using the `new` operator and passing in the name of a method whose signature matched that of the delegate type (in Visual Basic, the "pointer-y" aspect of this was even more clear, as one had to explicitly declare that the parameter was the `AddressOf` the delegate).

So, for instance, if one had declared a type `delegate void VoidDelegate();` one would instantiate it by writing `VoidDelegate myVoidDelegate = new VoidDelegate(myVoidFunction);` Ninety percent of the time, though, rather than defining a `myVoidDelegate` reference, one directly assigns the newly instantiated delegate to an event handler: `myButton.Click += new EventHandler(myButtonEventHandler);`

The use of delegates for event handling traces back at least to Delphi. (I am not sure if they were part of the lat-

er versions of Turbo Pascal.)

At first blush, anonymous delegates appear a little "syntactic sugar"-y. Instead of defining a separate method that matches the delegate type and instantiating the delegate with a `new`, one can define the method "inline" and the compiler can infer the type from the context. Thus, one can say `VoidDelegate myVoidDelegate = delegate { Console.WriteLine("foo"); };` and save a few lines of code. Just sugar, right?

Not quite. When you define an anonymous delegate, you can additionally manipulate any variable that is in the scope of the enclosing function. That's a short clause that holds a wealth of potential. With "outer-variable capture," one can manipulate, not just instance and class variables but locally scoped variables, such as, for instance, the elements of a font enumeration. Now, of course, if one wants to take the state of a particular loop and hold onto it for later manipulation, one can define a class with the appropriate fields and instantiate a new instance of the class every time one goes through the loop. Behind the scenes, this is precisely what the C# 2.0 compiler does.

Lambda functions (the traditional name for this type of functionality) and object-oriented programming are, to a large extent, interchangeable at some level. Both are ways to combine state

and behavior in a single element. I count myself as one of those who have made Lisp the most-abandoned language in programming, and macros, not lambdas, are the only feature for which I've actually pined. So I was not particularly planning on being especially taken by lambdas, at least not until LINQ, for which lambdas are essential.

What I found, though, is that I instantly and completely "clicked" into lambda-style programming in preference to object-oriented state manipulation. There's an immediacy and "locality" to simply grabbing or defining state-carrying variables directly in the outer scope that surprised me:

After all, lambda function or object, you're still defining something whose execution is deferred, and I've always considered that aspect to be the "tricky part" of such programming.

This experience of mine is too fresh for me to draw conclusions. I found myself effortlessly plowing through a somewhat complex recursive event handler that actually worked the first time I ran it. Was it inherent to the lambda function style? Was it the awakening of long-dormant Lisp neurons that fired me up? Was it the caffeine in a particularly good cup of coffee? I don't know.

I can say that, for the moment, I am quite smitten. Between lambda functions and LINQ, I honestly feel that two of

Microsoft's major languages (C# and Visual Basic) are bringing capabilities into the mainstream that haven't been common since the 1980s AI "bubble" (which, in retrospective comparison to the dot-com exuberance, barely qualifies as irrational).

Ultimately, the biggest question for mainstream acceptance is how the style plays "in the large." Since the Visual Studio visual designers automatically generate 1.0-style delegates, is it a good idea to have Forms that mix both approaches? Is "more than one way to do it" a good thing or a bad thing? That's always a debatable question in language design. Are lambda-style approaches as maintainable as object-oriented ones? Even if others share the "light turning on" feeling I've had, productivity can prove illusory if the result is "write-only code."

A final troubling question is how anonymous delegates will work in the multicore era of hardware, which is about to make concurrency *the* issue of software development. There are clearly problems with the standard model of object orientation with objects sharing state across threads and monitor-based locking of critical procedural sections, but at least it's obvious where the shared state is being carried.

Perhaps the most powerful tools to explore these questions are languages like Ruby and Lisp and, on the CLR, F# and C#. However, C# and Visual Basic are the mainstream, and quantity has a certain power all its own. ■

Larry O'Brien is a technology consultant, analyst and writer. Read his blog at www.knowing.net.

Windows & .NET Watch



Larry O'Brien

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Speaker:

Jason Swafford

Jason Swafford is responsible for product/solution strategy for CARS, the Compuware Application Reliability Solution. He has eight years of experience in software development, focusing on development, software quality assurance and product strategy, with his most recent projects involving quality control and test management.

Mr. Swafford has a B.S. in psychology, with a concentration in industrial and organizational factors, from Central Michigan University.



Speaker:

Keith Landers

Keith Landers is the Director of the Enterprise Application Services Practice and the Chief Technical Officer for Hewlett-Packard in the Americas. Prior to his current role, he was the CTO for Extreme Logic, responsible for technical direction and architecture. As a driving force in Extreme Logic's business solutions offerings, he provided leadership in the strategic development and deployment of leading-edge technology.

Mr. Landers has a Bachelor of Science degree in Business Administration with a focus in Management Information Systems from the Univ. of Central Florida.



Moderator:

Lindsey Vereen

Lindsey Vereen is the Editor of Software Test & Performance. Previously, he was Group Editorial Director for Embedded Systems at CMP Media LLC. He also served as Editorial Director for Embedded Systems Programming and Conference Director for the Embedded Systems Conferences.

After a decade in engineering and marketing management in the electronics systems industry, Mr. Vereen spent the past 15 years as a journalist, initially as Technical Editor for Electronics Test, and subsequently as Editor-in-Chief for Electronics Test, Design Automation, ASIC & EDA, and Integrated System Design.

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Repairing the Process

According to a recent survey by specialty research firm Clear Horizons, Java software development managers are enormously frustrated by their lack of ability to minimize software bugs before a product is released.

Of 216 managers responding to the survey, more than half said they have released software with bugs, with 41 percent of that group saying they found this to be extremely frustrating.

Clear Horizons said there are four reasons for this. The first is that development managers are not allocating enough time to assess code quality, and that even when they do, they are beginning to do the code reviews too late in the process. To support this premise, Clear Horizons reported that 40 percent of the respondents to the survey said they allocate time for code assessment in less than half of their projects.

The second reason cited for the inability to minimize bugs, according to Clear Horizons, is that development managers do not have any established metrics to measure code quality. Cited by 69 percent of the respondents was the frustration caused when developers on their teams do not follow Java best-quality practices. In the report, Clear Horizons wrote, "Related sources of frustration are teams that do not follow high/consistent coding standards (65%) and developers who produce code that is 'off-spec' and do not comply with customer requirements (67%)."

Third, Clear Horizons says managers called inefficient code review meetings a huge source of frustration. Of those surveyed, 40 percent reported they waste time in inefficient review meetings, and

69 percent of those found the meetings to be frustrating or extremely frustrating.

Finally, the report says, "a quarter of managers explicitly cited the inability to manage specific developers as a key frustration (70% frustration). In addition, almost 20% of managers reported having problems determining who, specifically, on their team is not conforming to the code quality standards (57% frustration)."

Industry Watch



David Rubinstein

From this data, Clear Horizons draws the conclusion that these development managers are underserved in terms of tools to do their jobs. Not surprising, since the study itself was commissioned by tools vendor Enerjy Software.

"The survey was driven by a sense we had speaking to our customers that there was this level of frustration," said Nigel Cheshire, CEO of Enerjy Software. "There are plenty of project planning and tracking tools, but tracking quality in real time is difficult. For instance, a good number of managers don't introduce quality metrics until the project is half over. It's more an issue that they don't know what to do rather than they're just not bothering."

"Clearly, they are pressed as managers," said Andy Cross, president of Clear Horizons. "Their tools are not providing them with all the features they require."

Not only that, but they feel the pain of bosses and customers breathing down their necks, and powerless to correct the problems, as budgets have tightened and resources dried up. Better tools would only seem to be part of the answer.

We here at SD Times publish a newspaper. If, because we couldn't keep track of our reporters, who themselves might not have been following

best journalistic practices, we went to press with two or three blank pages and two or three stories that libeled someone, getting improved dictionaries or computers with faster chips or better grammar checkers isn't going to solve the problem.

Now, I don't know who these managers are that responded to these questions with answers that reflected such a sense of helplessness. Maybe they were outstanding code writers in their own right who were given a promotion into management but not provided with any of the skill sets required to manage people and projects. But I don't want to belittle their trouble. Even a hypochondriac believes his pain is real.

What these developers are crying out for, first and foremost, are better processes and practices for developing software. These managers need to sit down with their teams, and their bosses, and lay down the law. Perhaps they go agile, where requirements are hashed out with the customer and code is reviewed very frequently, and it quickly becomes clear which developers are not making the grade. Or, they adopt some automated testing practices, which can help them identify defects in projects earlier on.

Then, once they have a process in place that they believe will help them succeed, they should go out and get the tools that they believe will fit best with what they're trying to accomplish. There are all kinds of tools out there—project management dashboards, defect trackers and tools that can help organizations throughout the application life cycle.

But without a solid foundation of process and good practices, all the tools in the world won't solve the problems these developers are having. Tools can only support a process; they can't create one. ■

David Rubinstein is editor-in-chief of SD Times.

BUSINESS BRIEFS

Application integration software provider **PolarLake** has closed a funding round of more than US\$7 million to support further international expansion. **Atlantic Bridge Ventures** led the round; **Add Partners** and **Delta Partners**, PolarLake's existing investors, also participated. The company will use this funding to drive continued expansion of its sales and marketing activities in Europe, the U.S. and Asia in order to capitalize on growing demand within large financial services and government organizations. . . . **Computer Associates** announced that its board of directors has authorized the repurchase of an additional US\$200 million in company shares during fiscal year 2006, bringing the total authorization to \$600 million. In April 2005, the company announced its board had authorized the repurchase of up to \$400 million in company shares for FY06, and the doubling of its annual cash dividend to 16 cents per share.

EARNINGS: **Microsoft** announced revenue of US\$9.74 billion for its first fiscal quarter 2006 ended Sept. 30, a 6 percent increase over the same period a year ago. Net income was \$3.14 billion, or 29 cents per share, including a 2 cents per share charge for settling a lawsuit with **RealNetworks**. Microsoft CFO Chris Liddell said the company hopes to conclude the remaining \$19 billion of a stock repurchase plan by December 2006. . . . **Sybase** reported the financial results for the 2005 third

quarter ending Sept. 30. Pro forma net income reached US\$30.1 million, or 33 cents per share. This compares with pro forma net income of \$27.4 million, or earnings per share of 29 cents, for the 2004 third quarter. . . . **WebMethods** reported revenue of US\$49.2 million for its second fiscal quarter ended Sept. 30, a slight decline from the \$50.8 million declared in the same quarter a year earlier. License revenue for the fiscal second quarter was approximately \$19.4 million, compared with \$23.9 million in the prior-year period. Under GAAP, the company's net income for the Sept 2005 quarter was \$2.5 million, or 5 cents per share, compared with the net loss of \$4.1 million, or 8 cents per share, in the same period a year ago. . . . **Pervasive Software** reported revenue of US\$11.7 million for the first quarter of fiscal year 2006, compared with \$11.8 million for the first quarter of the last fiscal year. Net income was \$300,000, or 1 cent per share, for the first quarter, compared with net income of \$800,000, or 3 cents per share, for the first quarter of the last fiscal year. . . . **ILOG** announced results for the 2006 fiscal first quarter ended Sept. 30 with revenue of US\$30.7 million and earnings of 11 cents per share. This compared with revenue of US\$29.1 million and earnings of 11 cents per share for the prior year's first quarter. Net income for the quarter was US\$2.2 million despite a charge of \$700,000 as the company for the first time applied a new accounting rule related to stock-based compensation. ■



CALENDAR OF EVENTS

Developer Days 2005 Nov. 29-Dec. 2

Santa Clara

ITANIUM SOLUTIONS ALLIANCE

www.itaniumsolutionsalliance.org/events/developer_days

Application Integration and Web Services Summit Dec. 5-7

Orlando, Fla.

GARTNER

www.gartner.com/2_events/conferences/apn15.jsp

Management Developers Conference Dec. 5-8

Santa Clara

MDC

mandevcon.com

Open Source Summit Dec. 7-9

Orlando, Fla.

GARTNER

www.gartner.com/2events/conferences/osl_section.jsp

ApacheCon Dec. 10-14

San Diego

APACHE SOFTWARE FOUNDATION

www.apachecon.com/2005/US

Macworld Conference Jan. 9-13

San Francisco

IDG WORLD EXPO

www.macworldexpo.com

VSLive Jan. 29-Feb. 2

San Francisco

FAWCETTE TECHNICAL PUBLICATIONS

www.ftponline.com/conferences/vslive/2006/sf

Developer Relations Conference Feb. 6-7

San Francisco

EVANS DATA

www.evansdata.com/drc2

Software Security Summit Feb. 6-8

San Diego

BZ MEDIA

www.S-3con.com

RSA Conference Feb. 13-17

San Jose

RSA SECURITY

2005.rsaconference.com/us/C4P06

Web Services/SOA on Wall Street Feb. 27

New York

LIGHTHOUSE PARTNERS & FLAGG MANAGEMENT

www.webservicesonwallstreet.com

SHARE March 5-10

Seattle

SHARE

www.share.org

Business Intelligence Summit March 6-8

Chicago

GARTNER

www.gartner.com/2_events/conferences/bi4.jsp

Emerging Technology Conference March 6-9

San Diego

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For a more complete calendar of U.S. software development events, see www.bzmedia.com/calendar.

Information is subject to change. Send news about upcoming events to events@bzmedia.com.



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